



# TWIN STATE ENVIRONMENTAL CORP.

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Phase (check one)	Type (check one)
<input checked="" type="checkbox"/> Initial Site Investigation	<input type="checkbox"/> Work Scope
<input type="checkbox"/> Corrective Action Feasibility Investigation	<input checked="" type="checkbox"/> Technical Report
<input type="checkbox"/> Corrective Action Plan	<input type="checkbox"/> PCF Reimbursement Request
<input type="checkbox"/> Corrective Action Summary Report	<input type="checkbox"/> General Correspondence
<input type="checkbox"/> Operations & Monitoring Report	

## INITIAL SITE INVESTIGATION

January 25, 1995

Calder & Richardson  
7 - 11 Mill Street  
Barre, Vermont

SMS Site #94-1723  
UST Facility #4763194  
TSEC #94-171

Facility Owned By:  
Calder & Richardson  
164 South Main Street  
Barre, Vermont 05641  
(802) 476-3194

Contact: Allan Merrill or Leonel Gregoire

Written By:

Kenneth J. Bisceglia  
Project Manager

Reviewed By:

John R. Diego  
Vice President

January 25, 1995

Mr. Richard Spiese, Acting Manager  
State of Vermont  
Sites Management Section  
103 South Main Street/West Office  
Waterbury, VT 05671-0404

**RE: INITIAL SITE INVESTIGATION REPORT  
Calder & Richardson, Bulk Storage Facility  
Mill Street, Barre, Vermont  
VT SMS Site #94-1723  
TSEC Project #94-167**

Dear Mr. Spiese:

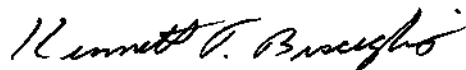
Enclosed is an Initial Site Investigation Report for the Calder & Richardson Bulk Storage Facility. This investigation was requested based upon gasoline-related contamination discovered during an underground storage tank closure performed last November.

Also performed during this investigation was a subsurface environmental assessment of the bulk storage facility in relation to a pending real-estate transaction. Portions of this investigation would apply to the Petroleum Cleanup Fund and portions were privately funded. At this time, it does not appear that the UST related investigation will exceed the \$10,000.000 deductible; therefore, it is not necessary to provide a breakdown of the project cost. Should the cost need to be broken down in the future, TSEC will be happy to provide it to you.

If you should have any questions please call.

Very truly yours,

**TWIN STATE ENVIRONMENTAL CORPORATION**



Kenneth J. Bisceglia  
Project Manager

encl.

cc: Allan Merrill/Leonell Gregoire, Calder & Richardson  
Skip Vallee, R.L. Vallee, Inc.

kjb:\project\94171cr\report.doc

## 1.0 EXECUTIVE SUMMARY

This report has been prepared by Twin State Environmental Corp. (TSEC) to present the findings of our recent Initial Site Investigation (ISI) at the Calder & Richard Bulk Storage Facility on Mill Street in Barre, Vermont. The ISI was requested by the State of Vermont Hazardous Materials Management Division Sites Management Section (SMS) and focused upon gasoline-related subsurface contamination detected during an underground storage tank (UST) closure performed in November 1994. TSEC was retained by Calder & Richardson to perform this investigation under an Agreement dated December 15, 1994.

Also included in this report are the findings of a subsurface environmental assessment that was concurrently performed pending a real-estate transaction. This assessment was performed for another client under a separate agreement.

In order to perform drilling of two (2) of the monitoring wells (TS-1 and TS-2), a suitable ground surface had to be prepared for access by the drilling equipment. This was necessary because the ground surface was disturbed during the November 1994 removal of two (2) USTs. Contractor services were provided by E.E. Packard from Barre, Vermont.

Subsurface explorations consisted of five (5) groundwater monitoring wells, nine (9) seep samples along the bank of the Steven's Branch River and one (1) soil sample collected beneath the garage building (see SITE Plan, **Figure 3**).

It appears that any gasoline release that occurred in the past is not posing a significant threat to the SITE at this time. Upon review of the Tank Closure Report, the area of highest contamination was detected just north of the former product dispensers and was probably less than 6 ft below ground surface (bgs). No volatile organic compounds (VOCs) were detected in monitoring wells in vicinity of the former USTs.

Significant subsurface impact on SITE has been found to be related to the bulk storage facility and a floor drain discharge from the garage building. Petroleum-related sheens were found in groundwater from two (2) monitoring wells and water at three (3) seep samples.

Further work that is recommended is a follow-up round of groundwater sampling of the five (5) monitoring wells and four (4) seep samples. The follow-up round is suggested due to the limited period of time between the drilling and initial sampling round (discussed in section 7.2.1) and also to obtain levels of total petroleum hydrocarbons (TPH). Test methods include EPA Methods 8020 and 8100 for the nine (9) proposed sampling locations.

Calder & Richardson  
Barre, Vermont  
VT SMS #94-1723

## 2.0 SITE LOCATION AND DESCRIPTION

**SITE Owner:** Calder & Richardson  
**Address:** 7-11 Mill Street, Barre, Vermont  
**Size:** 12,600 ft<sup>2</sup>  
**Zoning:** Industrial  
**Utilities:** Water - municipal connection  
Sewer - municipal connection  
Electricity - overhead connection  
**Structures:** One steel-framed warehouse building, one concrete block/brick garage building and a fuel oil bulk storage facility

The SITE is located on the northern side of Mill Street, about 0.15-mi. east of Route 14, in Barre, Washington County, Vermont (see SITE Location Map, **Figure 1**; and Barre Tax Map, **Figure 2**). Calder & Richardson is a fuel oil distributor and operates a bulk storage facility at the SITE (see SITE Plan, **Figure 3**).

A steel-framed warehouse building is used for parts storage for heating system repairs. The building was used in the past for drummed storage of various grades of petroleum products. There is one (1) 275-gal above ground storage tank (AST) inside the building that is used to store fuel oil for a forced hot air heating system.

A three bay garage building is used for vehicle storage and has a floor drain system that discharges behind the building adjacent to the Steven's Branch River. There is one (1) 275-gal AST inside the building that is used to store fuel oil for a forced hot air heating system. There is also a parts cleaning station that holds less than 30 gal of cleaning fluids such as mineral spirits.

There are seven (7) ASTs with total storage capacity of 100,000 gal; however, only 80,000 gal of storage capacity is currently in use. Products stored in the tanks are #2 fuel oil and kerosene. Until November 1994, when removed, there were two (2) USTs that were used for refueling vehicles.

## 3.0 REGIONAL SURVEY

The area development near the SITE is a mix of industrial and residential properties. The SITE is abutted to the north and east by the Steven's Branch River; to the south, across Mill Street, by Rivard Granite Co., Inc.; and to the west by the LeClerc Residence.

Farther from the SITE is industrial development to the north, south and east; and residential development to the east and west. The SITE and surrounding properties are provided with municipal water and sewer connections. Based upon information contained in the November 1994 UST Closure Report by The Johnson Company, the nearest public drinking water supply well is about 7 mi from the SITE.

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The SITE topography is relatively flat with the exception of the extreme northern and eastern portions that drop sharply down about 10 ft to the Steven's Branch River. Although the river is winding, the general flow path is to the north. Regional topography is comprised of rolling hills and the river valley.

#### 4.0 SITE HISTORY

The SITE has operated as a fuel oil bulk storage area since the 1920's. Early in the operation of the facility, fuel oil products were distributed to the SITE via rail way. A rail spur was formerly located across Mill Street near the southeast corner of the SITE. An underground pipeline system was used to transfer products from the rail cars to the bulk storage tanks. No visual evidence of the rail spur or pipelines were observed during the investigation.

#### 5.0 PREVIOUS ENVIRONMENTAL STUDIES

##### 5.1 Level I Environmental Site Assessment - The Johnson Company

Based upon a Level 1 Environmental Site Assessment report dated May 1991, conducted by The Johnson Company, evidence indicated that petroleum-related hydrocarbons have been detected in the shallow soils (1 to 3 ft below grade) predominately found in areas under the bulk storage tanks. A copy of The Johnson Company's report is included as **Appendix A**.

Concentrations of total petroleum hydrocarbons (TPH) were found to range from non-detect to 23,000 parts-per-million (ppm), substantially above the State of Vermont Hazardous Materials Management Division's TPH guideline level of 1,000 ppm for non-residential areas. These levels, although exceeding regulatory standards, are indicative of only near surface conditions.

Note: These TPH levels were based on laboratory testing, not field screening techniques.

##### 5.2 UST Closure Report - The Johnson Company

A UST Closure report dated November 1994, was also prepared by The Johnson Company pertaining to two (2) gasoline USTs. The report indicated that during the removal, gasoline-related contamination was encountered in the soils under the USTs, the associated piping and the two (2) product dispensers. Based upon the findings of the UST Closure Report, the State of Vermont has required Calder & Richardson to perform an ISI to identify the severity of contamination present. A copy of The Johnson Company's report is included as **Appendix B**.

#### 6.0 SUBSURFACE INVESTIGATION

As previously mentioned, two (2) investigations were being performed simultaneously on SITE. Three (3) of the wells (TS-1, TS-2 and TS-3) were installed to satisfy requirements of the ISI and two (2) other wells were installed for a client interested in the purchase of the bulk facility.

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No sampling was conducted in the bulk storage area because there was no access for an air rotary drill rig. Attempts could have been made using a tri-pod drill; however, the granite fill would have resulted in refusal. During the Level I ESA performed by The Johnson Company, refusal using a hand auger was encountered between 0.3 to 3.1 ft below ground surface (bgs). A SITE specific Health & Safety Plan was developed for SITE activities and is presented as **Appendix C**.

## **6.1 Monitoring Well Installation**

Under the direction of TSEC, five (5) monitoring wells were installed during December 19 and 20, 1994 by Tri State Drilling & Boring, Inc. of West Burke, Vermont. Due to the anticipated geology, a truck-mounted air rotary drill rig was used. The location of the monitoring wells and SITE features are depicted on **Figure 3** (SITE Plan). Boring logs are provided in **Appendix D**.

The newly installed wells were constructed of 2-in. sch. 40 polyvinylchloride (PVC) riser with 0.010-in. machine-slotted screen. The wells were protected with expansion plugs on the PVC riser and flush-mounted curb boxes, with the exception of TS-1 which was finished with a 2.5 ft steel stand pipe. The depth of wells ranged from 16.4 to 19.9 ft bgs.

### **6.1.1 SITE Geology**

The SITE is situated on the southern and western terraces of the Steven's Branch River which discharges some 5+ mi north of the SITE into the Winooski River. During drilling, fill was encountered that consisted of unconsolidated sand, gravel and granite fragments down to about 12 to 14 ft bgs. It was reported by the current SITE owner that the SITE had been built on fill consisting of granite tailings which were evident during drilling.

At about 14 ft bgs, near the level of the river, drilling became much easier and the final split-spoon samples collected between 16 to 22 ft bgs penetrated a homogeneous layer of silty fine sand. Well TS-3 was an exception, a sample at 16 to 18 ft bgs was similar silty sand, yet had intrusions of well-rounded gravel.

### **6.1.2 SITE Hydrogeology**

Depth to water, as observed on December 21, 1994 in the five (5) monitoring wells, ranged from about 9.5 to 11.5 ft bgs (see **Table 1**, Summary of Groundwater Elevations). The surface water elevation of the Steven's Branch River was surveyed at about 13.6 ft bgs. Based upon groundwater elevations and SITE topography, groundwater appears to be flowing generally to the northwest. The horizontal gradient of the water table is fairly flat ( $\sim 0.005$  ft/ft) and becomes steeper near the river bank ( $\sim 0.01$  ft/ft), (see Groundwater Contour Map, **Figure 4**).

Since most of the SITE is covered with sand, gravel and grass cover, there is a high rate of percolation into the subsurface from precipitation. Also, the Steven's Branch River forms an S-shape around the SITE which most likely contributes a fairly significant vertical gradient to the

water table. These factors would suggest that there is a high recharge rate of groundwater at the SITE which would tend to provide dilution of contaminants.

## **7.0 SAMPLING AND RESULTS**

### **7.1 Field Screening of Soils**

#### **7.1.1 Split-spoon Sampling**

Split-spoon soil samples were field screened using a ThermoEnvironmental Organic Vapor Meter (OVM) with a 10.6 eV photoionization detector to detect the presence of VOCs. Data collected during the field screening are summarized in **Table 2** (Summary of Headspace Field Screening) and on **Figure 5** (Soil Field Screening Plan).

The highest concentration was 176 parts-per-million volume (ppmv) found at TS-4 at a depth of 8 to 10 ft bgs. Well TS-4 is located in the bulk facility loading area used by transport trucks delivering fuel to the facility.

#### **7.1.2 Soil Seep Samples**

Soil samples were collected along the base of the river bank at locations where water was encountered at a depth of about 1 ft bgs. Nine (9) soil samples were collected and evidence of fuel oil/petroleum products were encountered. Data collected during the field screening are summarized in **Table 2** (Summary of Headspace Field Screening) and on **Figure 4** (Soil Field Screening Plan).

No samples could be collected between SS-1 and SS-9 due to a dense concentration of granite blocks and tailings. This area could be fairly impacted based upon subsurface conditions observed at upgradient wells TS-3 and TS-4. Also, a 15 in. sewer pipe and trench is located just west of TS-3 and passes under the river at a depth of about 15 ft bgs. This pipe and trench may induce a sump effect causing contamination to concentrate in this location.

Two locations along the river bank were found to be highly impacted. Sample SS-2 and SS-9 had concentrations of 125 and 109.3 ppmv, respectively and had heavy odors and sheens.

#### **7.1.3 Core Sample at Garage Building**

To obtain a soil sample from below the garage building, a 3 in. coring drill bit was used to penetrate the 8 in. thick concrete floor. The sample location was about 10 ft downgradient of the floor drain inside the garage building and was intended to assess subsurface conditions near the floor drain. A hand auger was used to obtain a soil sample upon refusal at a depth of 6 ft bgs. No evidence of contamination was observed or measured in the soils encountered from surface grade to the point of refusal.

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The core sample was also laboratory tested via EPA Methods 8260 and 8270 PAH. No compounds were detected above instrument detection limits.

## 7.2 Groundwater Sampling and Results

### 7.2.1 Monitoring Wells

The five (5) newly installed groundwater monitoring wells were developed and purged prior to sampling. Due to time constraints pending a real-estate transaction, the monitoring wells were sampled on December 21, 1994 immediately following drilling on December 19 - 20, 1994.

Based upon visual and olfactory observations, groundwater from well TS-3 appeared to be the most impacted, located downgradient of the facility loading area. Groundwater from wells TS-1, TS-2 and TS-3 were tested for via EPA Methods 8020 and 8015 and groundwater from wells TS-3, TS-4 and TS-5 were tested via EPA Methods 8260 and 8270 PAH (polynuclear aromatic hydrocarbons).

NOTE: Testing parameters for TS-3 were overlapped for a basis of comparison. Analytical costs for EPA Methods 8260 and 8270 would not be considered for reimbursement under the UST Closure and ISI.

Based upon laboratory results from ChemServe Environmental Analysts of Milford, New Hampshire, no BTEX (benzene, toluene, ethylbenzene and xylenes) or MTBE (methyl-tertiary-butyl ether) compounds were found in the groundwater above instrument detection limits.

The only compound identified from all of the sampling results was 1,3,5-trimethylbenzene in well TS-4 at a concentration of 5 micrograms per liter ( $\mu\text{g/L}$ ). A summary of the sampling results is presented in **Table 3** and the laboratory report with QA/QC data is presented in **Appendix E**.

### 7.2.2 Seep Samples

Four (4) seep samples were collected from along the river bank in four (4) of the nine (9) soil seep sample locations discussed previously in Section 7.1.2 and are depicted on **Figure 3**. Seep samples SS-1 and SS-2 were tested via EPA Methods 8020 and 8015 and samples SS-5 and SS-9 were tested via EPA Methods 8260 and 8270 PAH.

NOTE: Analytical costs for EPA Methods 8260 and 8270 would not be considered for reimbursement under the UST Closure and ISI.

Based upon visual, olfactory and field screening results, water from SS-2 and SS-9 appeared to be heavily impacted with a fuel oil like petroleum product, and heavy sheens were observed on the water samples. Sample SS-5, near the outfall of the garage floor drain exhibited similar signs of impact but to a much lesser degree.

Johnson Car  
Phase I  
indicated at  
w/low flow  
drain

Siphon System  
well failed up  
outfall



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Based upon laboratory analytical results, no compounds were identified above instrument detection limits from all the sampling results. A summary of the sampling results is presented in **Table 3** and the laboratory report with QA/QC data is presented in **Appendix E**.

## **8.0 POTENTIAL RECEPTORS**

Potential receptors identified during this investigation appear to be the Steven's Branch River and a sewer trench located just west of TS-3 at about 15 ft bgs (see Barre Tax Map, **Figure 2**; and SITE Plan, **Figure 3**). Although portions of the riverbank appear to be fairly well saturated with petroleum products, no sheen was found in the river water. This condition may change as higher water table elevations in the spring and early summer may cause a leaching effect to the river.

## **9.0 CONCLUSIONS AND INTERPRETATIONS**

Although laboratory analytical results do not indicate groundwater contamination of aromatic hydrocarbons (BTEX), polynuclear aromatic hydrocarbons (PAH) or oxygenated alkanes such as MTBE, visual, olfactory and field screening results indicate fairly heavy impact of petroleum products in several locations on SITE.

### **9.1 UST Closure Related Issues**

The only evidence of gasoline-related contamination was encountered during drilling of well TS-2, where some odors were notice at about 14 ft bgs. No VOCs were detected in soil samples during field screening or in groundwater laboratory samples.

It appears that any gasoline release that occurred in the past is not posing a significant threat to the SITE at this time. Upon review of the Tank Closure Report by The Johnson Company, the area of highest contamination was detected just north of the former product dispensers and was probably less that 6 ft bgs.

During the removal of the USTs and dispensers last November, it is possible that volatilization of some of the contaminated soils had occurred and has improved the subsurface conditions in this location of the SITE. Also, due to the hydrogeological conditions of the SITE, contaminant advection probably occurs as a fairly significant rate lending to the groundwater quality.

### **9.2 Overall SITE Conditions**

The most significant subsurface impact on SITE has been found to be related to the bulk storage facility and outfall of a floor drain from the garage building. Sheens found along the river bank at two (2) seep sample locations suggest that bulk portions of the subsurface soils have been impacted, causing migration of petroleum products to the river bank. A soil seep sample (SS-5) collected near the outfall pipe of the Garage Building's floor drain exhibited PID readings of 4.8 ppmv, and there was a light sheen present.

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A soil seep sample collected behind the Warehouse Building (SS-2) had PID readings of 125 ppmv, with a heavy sheen. About 10 ft east or west of this sample, conditions were relatively low level (<2.0 ppmv). Although the sample location is downgradient of the former gasoline UST area, the contamination appeared to resemble a fuel oil petroleum distillate. Reports by a SITE representative indicated that the area near TS-1 was used as a drum storage area (refer to **Figure 5**).

During drilling of the five (5) groundwater monitoring wells, petroleum odors were noticed in all borings except B-5/TS-5. Soil samples collected at 10 to 12 ft bgs were found to contain higher VOC concentrations than samples collected between 10 to 22 ft bgs.

A soil sample collected at 10 to 12 ft bgs at TS-4 exhibited the highest field screening levels (176 ppmv). During groundwater sampling activities, water at TS-3 appeared to be the most impacted as evidenced by a fairly heavy sheen.

This relationship of soil to groundwater contamination appears to represent that percolation of precipitation and groundwater flow through the heavily impacted soils near TS-4 resulted in the heavily impacted groundwater at TS-3.

→ BTEX + MTBE - ND  
TPH < 100 ppb

Typically, the downward migration of petroleum stops at the groundwater table and migration at that point usually follows the gradient of the water table and groundwater flow direction. It appears that over time enough petroleum products have impacted the subsurface soils to migrate to the water table. Depth to groundwater ranged from about 9.5 to 11.5 ft bgs and appears to be flowing in a northwesterly direction towards Steven's Branch River. The environmental quality of the groundwater appears to be more degraded on the down gradient portion of the SITE (north).

Some other factors that may influence and enhance the migration of petroleum through the subsurface are subsurface utilities. The underground sewer pipe (15 in.) that runs just west of TS-3 and SS-9 and is set in a trench about 15 ft bgs may induce a sump effect influencing the high levels of contamination observed at TS-3 and SS-9.

## 10.0 RECOMMENDATIONS

Based upon current conditions observed at the SITE, TSEC offers the following professional recommendations:

- A follow-up round of groundwater sampling of the five (5) monitoring wells and four (4) seep samples. The follow-up round is suggested due to the limited period of time between the drilling and initial sampling round and also to obtain levels of total petroleum hydrocarbons (TPH). Test methods include EPA Methods 8020 and 8100 for all nine sampling locations.

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*Ken reported that TPH samples  
had been taken on 1/27/95*

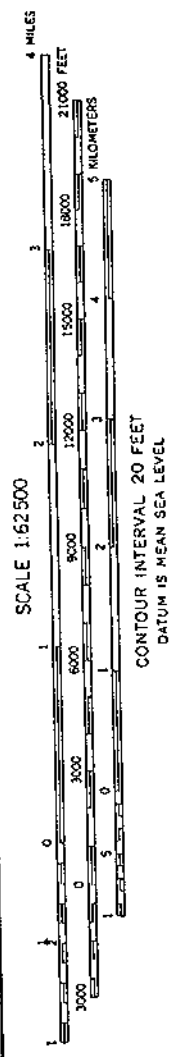
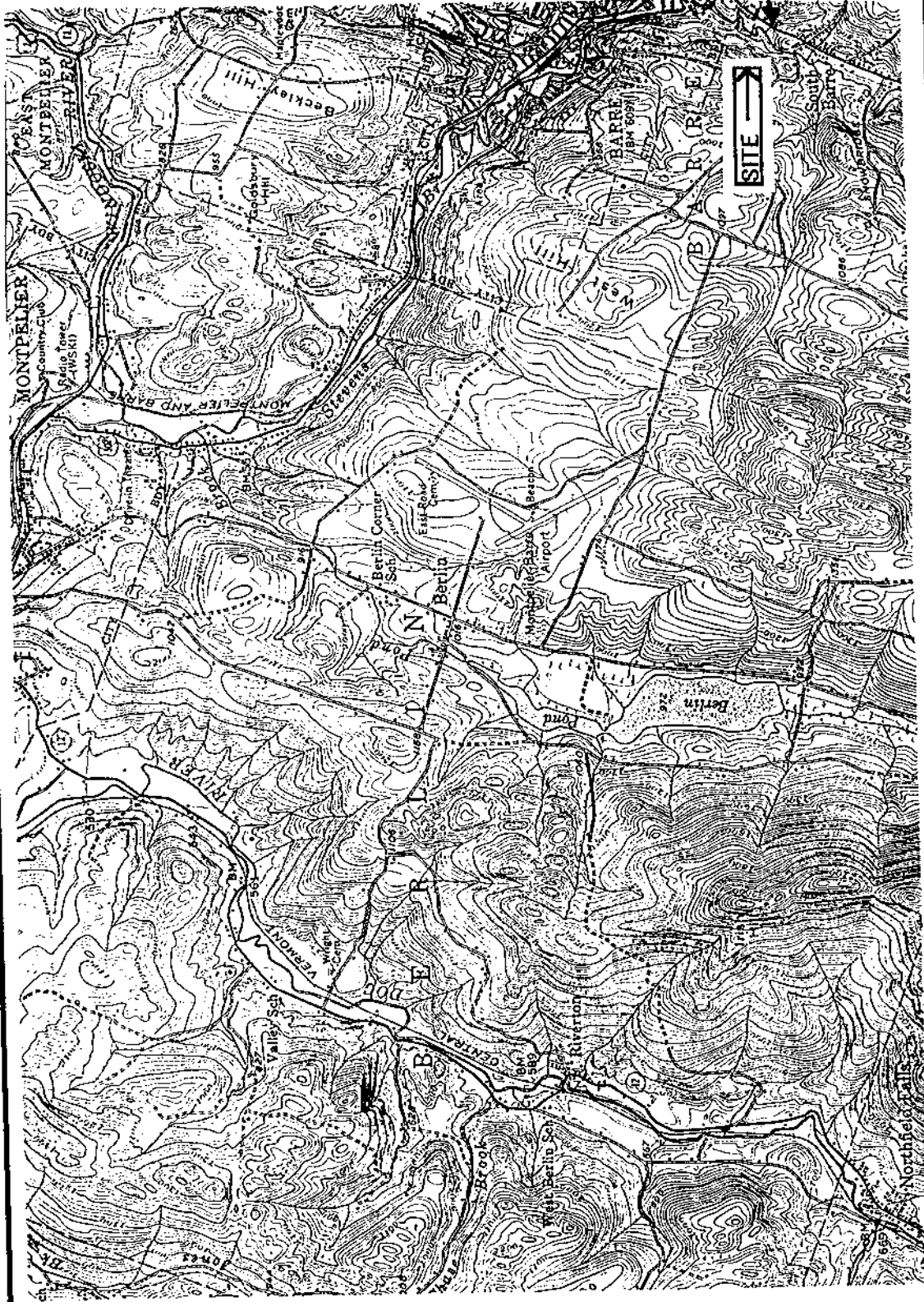
*TPH not found  
<100 ppm in  
TS-1-TS-3*

Testing for TPH would be useful in determining the bulk impact of petroleum hydrocarbons to the groundwater. Although no BTEX, MTBE or PAH compounds were found dissolved in the groundwater, it is expected that TPH levels will be found. Test method 8100 tests a prepared extract of the groundwater sample by flame ionization detection which will identify aliphatic compounds not included in methods 8020, 8260 or 8270 PAH. In addition, aliphatic compounds make up a high percentage of a fuel-oil distillate.

TPH was not originally tested for because there are no groundwater quality standards established for TPH in groundwater. Due to the chemical properties of the contamination at the SITE it is the only feasible test method, besides HPLC analysis, for establishing and monitoring levels of contamination at the SITE.

- The floor drain in the garage building should be either rendered out-of-service, or if allowable, connected to the municipal sewer system following relevant city and state specifications.
- All efforts should be made to limit any further infiltration of petroleum products to the subsurface soil and groundwater.
- It should be noted that, according to federal regulations 40CFR110/112 (Discharge of Oil/Oil Pollution Prevention), any impact to navigable waters in the United States (i.e. sheens) are to be reported to the National Response Center (800-424-8802) and State of Vermont Hazardous Material Management Division (802-241-3888). No sheens in the Steven's Branch River were observed during this investigation; however, could occur based upon conditions observed along the river bank at seep locations.

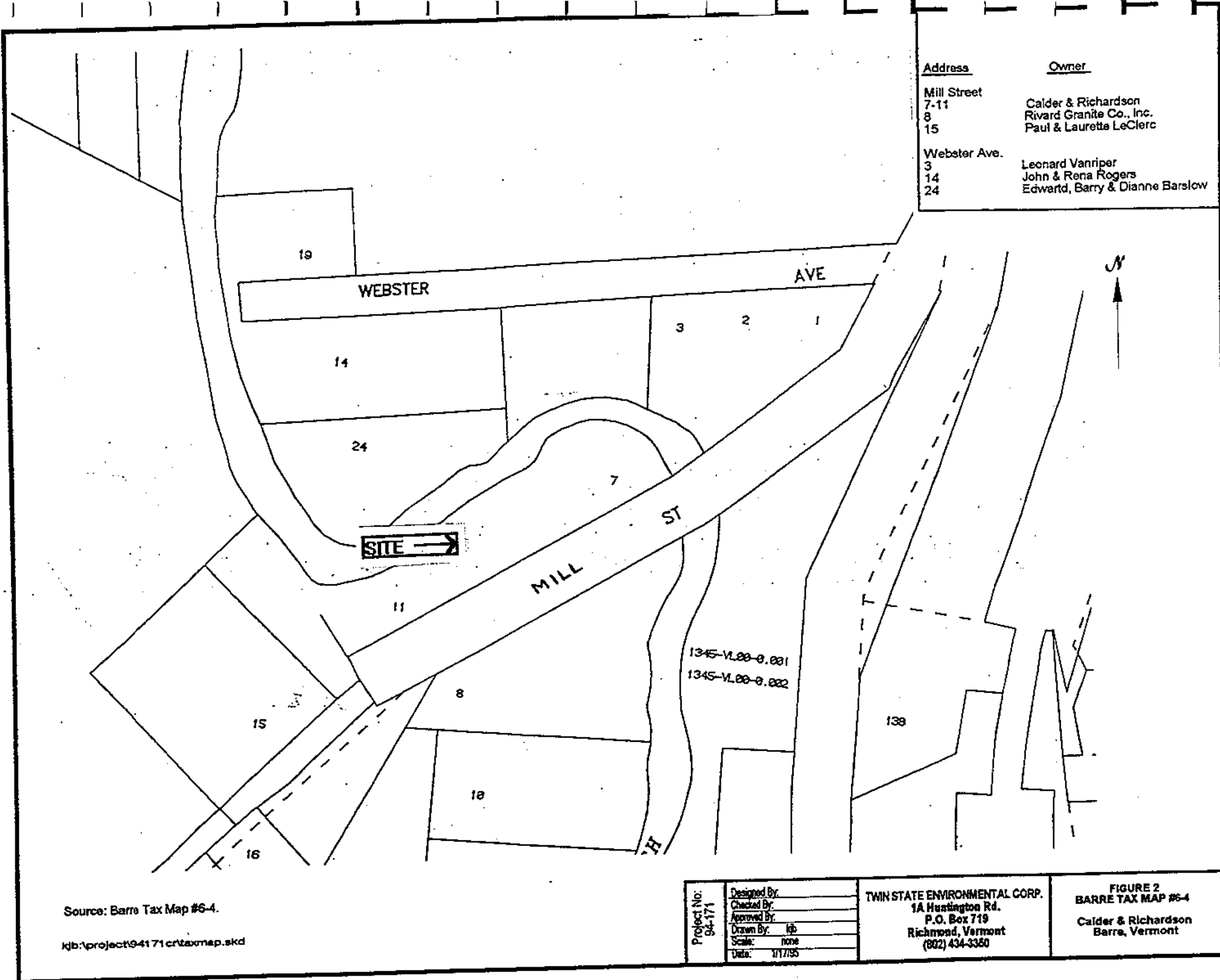
## FIGURES

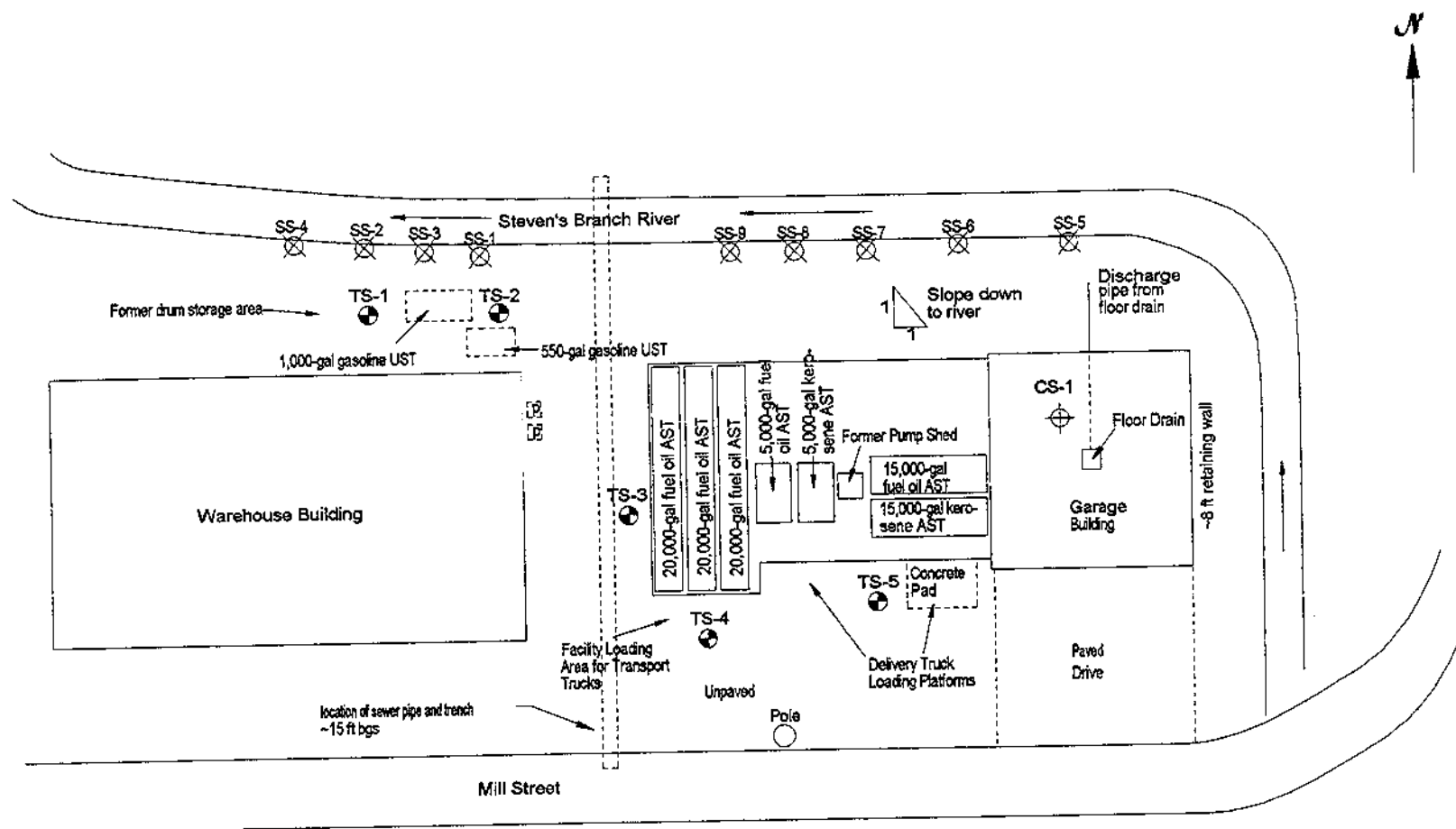


BARRE QUADRANGLE  
VERMONT  
15 MINUTE SERIES (TOPOGRAPHIC)



Designed by:	
Checked by:	
Approved by:	
Drawn by:	KB
Scale:	none
Date:	11/17/95
Project No.	94-171
TWIN STATE ENVIRONMENTAL CORP. 1A Huntington Rd. P.O. Box 719 Richmond, Vermont (802) 434-3350	
FIGURE 1 SITE LOCATION MAP Calder & Richardson Barre, Vermont	





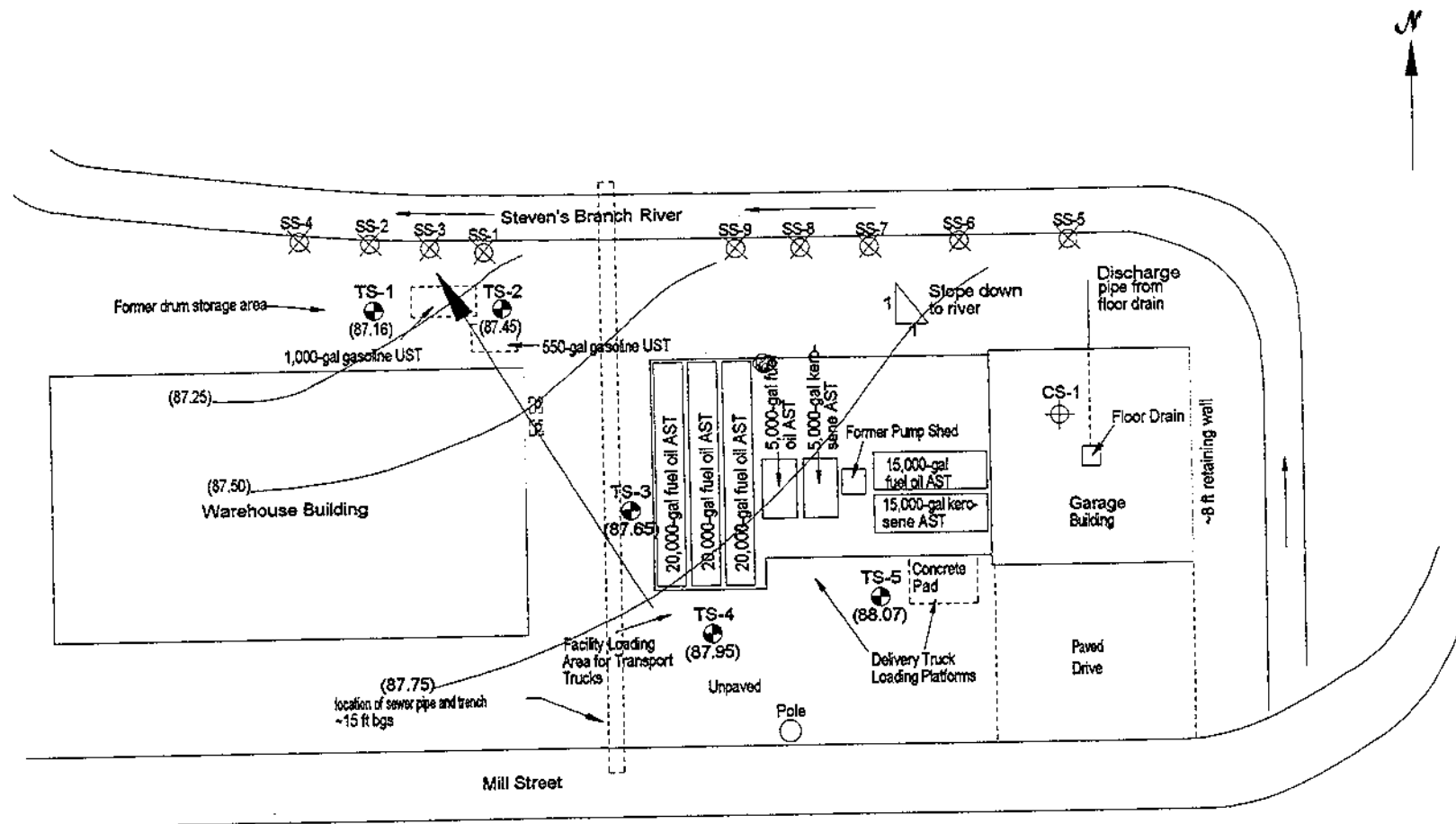
# LEGEND

- Monitoring Well
- ⊗ Seep Sample
- ⊕ Core Sample
- ☒ Gasoline product dispenser

0 10 20 40ft  
Approximate  
Scale  
1"=40'

kjb:\project\94171\crs\siteplan.skd

Project No: 94-171	Designed By:	TWIN STATE ENVIRONMENTAL CORP. 1A Huntington Rd. P.O. Box 718 Richmond, Vermont (802) 434-3360	<b>FIGURE 3 SITE PLAN</b>  Calder & Richardson Barre, Vermont
	Checked By:		
	Approved By: jrd		
	Drawn By: kjb		
	Scale: none		
	Date: 1/17/94		



#### LEGEND

- Monitoring Well  
(0.00) Groundwater elevation in units of feet (12/21/94). Referenced to a temporary benchmark with elev. of 100.00.
- ⊗ Seep Sample
- ⊕ Core Sample
- ⊞ Gasoline product dispenser
- Interpreted groundwater flow direction (12/21/94).

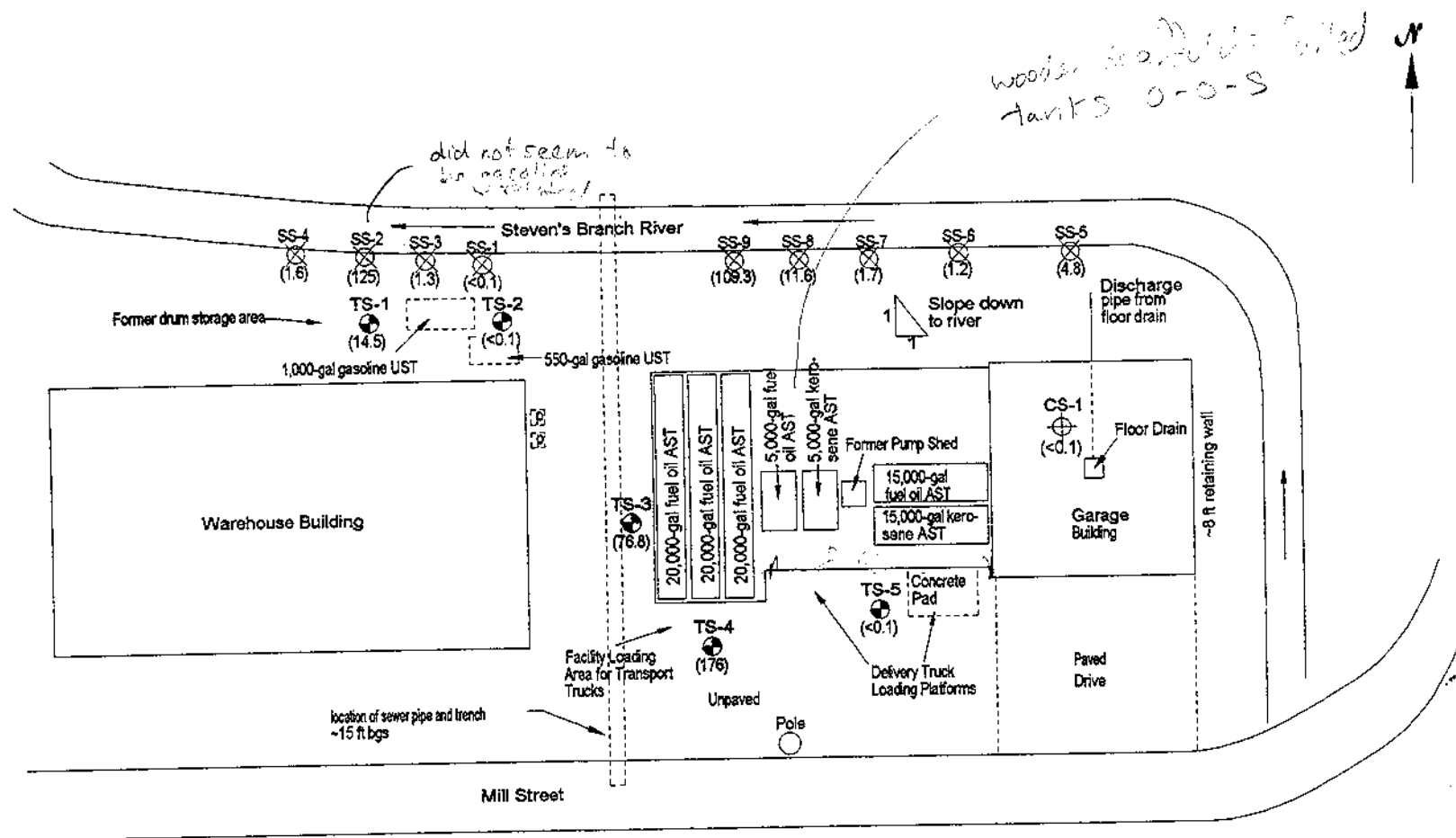
0 10 20 40ft

Approximate  
Scale  
1"=40'

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Project No: 94-171	Designed By:	WIN STATE ENVIRONMENTAL CORP. 1A Huntington Rd. P.O. Box 719 Richmond, Vermont (802) 434-3350	FIGURE 4 GROUNDWATER CONTOUR MAP  Calder & Richardson Barre, Vermont
	Checked By:		
	Approved By: lrd		
	Drawn By: kjb		
	Scale: none		
	Date: 1/17/94		





#### LEGEND

- ⊕ Monitoring Well  
(0.0) Field screening results (ppmv) at 8-10 ft bgs using a PID.
- ⊗ Seep Sample  
(0.0) Field screening results (ppmv) at 1 ft bgs next to river.
- ⊕ Core Sample  
(0.0) Field screening results (ppmv) at 6 ft below concrete floor.
- ⊗ Gasoline product dispenser

0 10 20 40ft  
Approximate  
Scale  
1"=40'

Notes:  
All field screening results were obtained using a jar headspace technique and vapors measured using a PID with a 10.6 eV lamp.

Project No: 94-171	Designed By:	WIN STATE ENVIRONMENTAL CORP. 1A Huntington Rd. P.O. Box 719 Richmond, Vermont (802) 434-3350	FIGURE 5 Soil Field Screening Plan  Calder & Richardson Barre, Vermont
	Checked By:		
	Approved By: Jrd		
	Drawn By: kjb		
	Scale: none		
	Date: 1/17/94		

## TABLES

**TABLE 1**  
**SUMMARY OF GROUNDWATER ELEVATIONS**  
**December 21, 1994**

Calder & Richardson  
Barre, Vermont

Well Identification	Top of Riser Elev.	Depth to Product	Depth to Water	Depth of Well	Thickness of Water Table in Well	Water Table Elev.
TS-1	101.11	ND	13.95	22.40	8.45	87.16
TS-2	98.62	ND	11.17	16.40	5.23	87.45
TS-3	98.05	sheen	10.40	16.42	6.02	87.65
TS-4	97.62	sheen	9.67	16.55	6.88	87.95
TS-5	97.62	ND	9.55	16.40	6.85	88.07
River			13.64			86.36

**Notes:**

*Water elevation data obtained on 12/21/94 are referenced to a temporary benchmark (100.00 ft) located at the southwest corner of the concrete diked containment wall. All measurements are in units of feet.*

*ND - Not detected.*

*Measurements recorded are referenced to a marking on top of PVC riser for each well.*

*All wells are flush finished at surface grade with curb boxes except TS-1 which extends 2.5 ft above grade and is finished with a steel stand pipe.*

*Depth to fluid measurements were obtained using a Solinst Interface Probe.*

kjb:\project\94171cr\wtel1294.wb1

TABLE 2

## HEADSPACE FIELD SCREENING SUMMARY

Calder & Richardson  
Barre, Vermont

Sample ID	Depth (ft)	Concentration (ppmv)
TS-1	8 - 10	14.5
	20 - 22	<0.1
TS-2	8 - 10	<0.1
	20 - 22	<0.1
TS-3	8 - 10	76.8
	16 - 18	<0.1
TS-4	8 - 10	176
	16 - 18	16
TS-5	8 - 10	<0.1
	16 - 18	<0.1
SS-1	1	<0.1
SS-2	1	125
SS-3	1	1.3
SS-4	1	1.6
SS-5	1	4.8
SS-6	1	1.2
SS-7	1	1.7
SS-8	1	11.6
SS-9	1	109.3
CS-1	6	<0.1

## Notes:

TS - samples collected from split-spoon sampling during drilling 12/19 - 20/94.

SS - seep samples collected along-side Stevens Branch River 12/20 - 22/94.

CS - Core sample collected under garage floor 12/19/94.

ppmv - parts-per-million volume.

Volatile organic compounds measured with a Thermo Environmental Instruments Model 580B photoionization detector (PID) with a 10.6 eV lamp. The instrument was calibrated with an isobutylene standard, and a quality control check sample was also tested to ensure the accuracy of the data.

k:\b:\project\94171cr\fs1294.wb1

straight chain Alkanes

TABLE 3

SUMMARY OF GROUNDWATER QUALITY  
AND SOIL FIELD SCREENING

Calder & Richardson  
Barre, Vermont

December 1994

Sample ID		TS-1	TS-2	TS-3	TS-4	TS-5	SS-1	SS-2	SS-5	SS-9
Date		12/21/94	12/21/94	12/21/94	12/21/94	12/21/94	12/20/94	12/20/94	12/22/94	12/22/94
Test	VGES	Concentration, ppb								
Benzene	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene	2,420	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	680	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total Xylenes	400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX	-	-	-	-	-	-	-	-	-	-
MTBE	100 (1)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
TPH 8015	-	<100	<100	<100	nt	nt	nt	nt	nt	nt
1,3,5 TMB (2)	VHA - 4	nt	nt	<1.0	5.0	<1.0	<1.0	<1.0	<1.0	<1.0
8270 PAH (3)	-	nt	nt	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Sheen on Groundwater	-	no	no	yes	yes	no	no	yes	yes	yes
Soils										
Field Screening (4), ppmv	-	14.5	<0.1	76.8	176	<0.1	<0.1	125	4.8	109.3
Depth of soil sample (ft)	-	8-10	8-10	8-10	8-10	8-10	1	1	1	1

Notes:

- VGES - Vermont Groundwater Enforcement Standard.
- (1) - Vermont Health Advisory (VHA) standard for MTBE.
- (2) - 1,3,5-Trimethylbenzene (EPA Method 8260).
- (3) - Polynuclear aromatic hydrocarbons (EPA Method 8270).
- (4) - Field screening of soils using PID with 10.6 eV lamp. Sampled 12/19-22/94.
- Samples TS-1, TS-2 and TS-3 were tested via EPA Methods 8020 and 8015.
- Samples TS-3, TS-4, TS-5 were tested via EPA Methods 8270 PAH and 8260.

## **APPENDIX A**

# ENVIRONMENTAL SITE ASSESSMENT

## Level I

### CALDER & RICHARDSON

*Barre, Vermont*

*May 1991*

- 2 fuel oil AST areas need further investigation

- Drum of PCE should be properly labeled - but not waste.

- drain in garage floor may exit to drywell or municipal system

- floor stained in garage

- waste oil, solvents, etc. used

*Prepared For:*

**Granite Bank**

*Prepared by:*

**THE JOHNSON COMPANY, INC.**

*5 State Street - Montpelier, Vermont 05602*

*(802)229-4600*

**ENVIRONMENTAL SCIENCES AND ENGINEERING**

THE JOHNSON COMPANY, INC.

***Environmental Sciences and Engineering***

May 30, 1991

Mr. Elden Dube  
Granite Bank  
36 North Main Street  
Barre, Vermont 05641

Re: Level I Environmental Site Assessment (ESA)  
Calder & Richardson - Barre, Vermont  
JCO #1-0726-1 (54)

Dear Mr. Dube:

Enclosed are two copies of our report for the referenced project. If you should have any questions regarding the report, please feel free to call.

Sincerely,

THE JOHNSON COMPANY, INC.

By:  for:

Alan Huizenga, P.E.  
Senior Engineer

Enclosure

Reviewed By: HMC



## EXECUTIVE SUMMARY

The Johnson Company, Inc., performed an Environmental Site Assessment (ESA) at the Calder & Richardson site in Barre, Vermont at the request of the Granite Bank. It is our understanding that the bank is considering refinancing the property.

The site is located at 11 Mill Street in Barre, Vermont and is bounded by the Stevens Branch of the Winooski River to the west and Mill Street to the east. The property is relatively flat, but slopes steeply to the Stevens Branch along its western border.

The potential risk inherent with the present use of this property, as an oil distribution facility, prompted The Johnson Company to recommend initial soil borings for the purpose of obtaining soils samples for analyses. A total of ten borings were performed at various depths and the soils analyzed for the presence of total petroleum hydrocarbons, which, if found, could represent the presence of fuel oil in the subsurface.

Petroleum hydrocarbon soil contamination was found on the site based on results from Scitest Analytical Services. In accordance with 10 V.S.A Chapter 159 the State of Vermont Agency of Natural Resources should be notified of the suspected release of hazardous materials. If Granite Bank wishes to pursue the site any further, The Johnson Company recommends a Level II Environmental Site Assessment be performed to better characterize the nature and extent of contamination.

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APPENDIX B	-	Chain of Custody Forms
APPENDIX C	-	Scitest Analytical Services - Analytical Results
APPENDIX D	-	10 V.S.A Chapter 159 Sections 6612, 6615, and 6617

## 1.0 INTRODUCTION

The Johnson Company, Inc., performed an Environmental Site Assessment (ESA) at the Calder & Richardson facility in Barre, Vermont at the request of Granite Bank. This ESA included a review of the history of the site, its regulatory status and a site inspection. In addition, ten soil borings were performed on the property to obtain soils samples for laboratory analysis. The purpose of the ESA was to assess the likelihood of a past or ongoing release of hazardous material on or near the site which might result in environmental degradation.

The site is located at 11 Mill Street in Barre, Vermont (see Figure 1) and is bounded by the Stevens Branch of the Winooski River to the north and east and Mill Street to the south. The property is relatively flat, but slopes steeply to the Stevens Branch along its western border.

## 2.0 FINDINGS

### 2.1 SITE HISTORY

Historical use or uses will indicate the types of activities which have occurred on a site. Exhibit A-1 (see Appendix A) is an environmental questionnaire completed by the present owner of the property. The response to item #3 of the questionnaire states that the facility has been used since its purchase in 1980, as a bulk petroleum, warehouse and truck storage for a retail fuel company (Calder & Richardson). The former owner, Filling Station Supply, used the site for retail and wholesale lube oils, gasoline and aviation fuel. The site is serviced by public water and sewer. A review of the Sanborn Maps on microfilm at the state library in Montpelier, Vermont reveals that the site was being used as a coal and wood yard as early as 1925.

Although little historical data was available regarding the site, most recent uses dictate that an intrusive investigation be performed to determine whether any activities may have occurred on the property that could cause soil or water contamination. These potential activities include the release of materials in the environment from spills, leaking equipment, and storage containers or improper disposal.

### 2.2 REGULATORY STATUS

The regulatory status of the site was investigated with the Vermont Department of Environmental Conservation (DEC) by contacting Ms. Ann Wright, Information Officer at the DEC Sites Management Section. This is done to determine if the site was on CERCLIS, NPL, Vermont Hazardous Sites List or Vermont Petroleum Sites List. Ms. Wright stated that the site is not included on any of the above lists during a telephone conversation on April 26, 1991.



FIGURE 1 - SITE LOCATION MAP  
324 NORTH MAIN STREET  
BARRE, VERMONT

THE JOHNSON COMPANY, INC.  
Environmental Sciences and Engineering  
MONTPELIER, VERMONT

## 2.3 SITE INSPECTION

### 2.3.1 Initial Site Walkover

A site walkover inspection was performed by The Johnson Company during which an HNu brand photoionization detector (PID) was utilized to screen for organic chemicals which may have been present in the air during the inspection. The PID is equipped with a 10.6 electron-volt lamp and was calibrated to 61 parts per million (ppm) isobutylene at a span setting of 8.2 before and after the site inspection. The intent of this walkover was to determine whether a release may have occurred on the site. PID readings above background levels were observed on the site suggesting the presence of organic compounds, with maximum readings at sample location SS6. Readings of 1.0 ppm in the workspace and 20 ppm in the borehole were observed at this location.

The site contains two buildings, two underground storage tanks (UST) and eight above ground storage tanks (AGST). The two UST's are 550 and 1000 gallon tanks and are used to store unleaded and regular gasoline, respectively. The two UST's were issued a permit from the state in 1989, at which time they were recorded as being 23 years old. The eight AGST's consist of three 20,000 gallon tanks containing #2 fuel oil, two 15,000 gallon tanks presently containing fuel oil (previously used to store gasoline), and two 5,000 gallon tanks containing kerosene and fuel oil. One of the 5,000 gallon tanks previously contained aviation fuel. The last two tanks are 275 gallon fuel tanks for heat which are inside the two buildings.

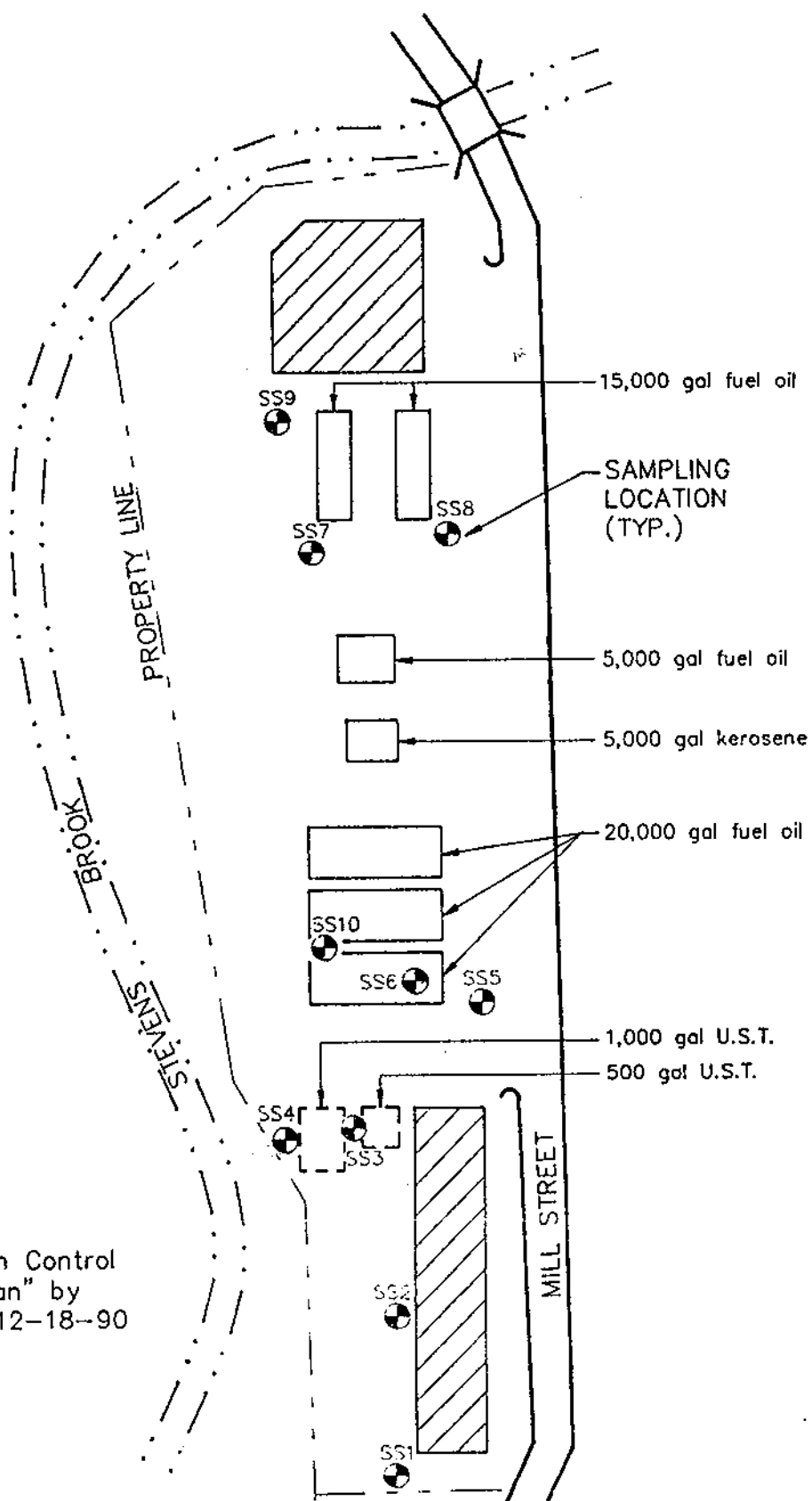
The smaller of the two buildings, located on the east end of the site, is a garage primarily used for truck repair. Johnson Company personnel ran water down a floor drain located inside the building to attempt to determine if it was connected to the municipal sewer system. The water did not come out the drain that exits to the Stevens Branch and therefore it is assumed that this floor drain is connected to the sanitary sewer. Noticeable fumes were encountered in the garage. The fumes are most likely the result of a combination of poor ventilation and a mixture of common solvents, oils and paints utilized in the garage. An inventory of materials in the garage includes ammonium chloride, waste oil, heating fuel, paint remover, parts bath, gasket remover, enamel paint, windshield washer, engine cleaner spray, motor oil, and pipe joint cement.

dry  
well  
may be  
exiting point  
for drain

The warehouse located near the west end of the site had a concrete floor slab with cracks up to one inch in width. In addition, the floor was darkened with stains. Two 55-gallon drums were located inside the building. One drum was labeled "DuPont Perchloroethene" and was partially full. The drum was painted gold and did not have modern markings. The second drum was empty, black, unlabeled and had a missing bung cover. The warehouse presently holds car parts and other parts and in the past held cans of oil and tires.

### *2.3.2 Soil Sampling and Analysis*

During the site inspection, a total of ten soil samples and one duplicate were taken utilizing a hand auger. The sampling locations are shown in Figure 2. Chain-of-custody forms for the samples are contained in Appendix B. The samples were forwarded to Scitest Laboratory Services in Randolph, Vermont and analyzed for Total Petroleum Hydrocarbons (TPH). This analyte was chosen since it is an effective way of determining if many of the more prolific compounds suspected or known to be used on the site (fuel oil, kerosene, jet fuel, gasoline) were released to the soils. The results of these analyses are contained in Table 1 with the depth at which the samples were taken (see Appendix C).



Source: "Spill Prevention Control and Countermeasure Plan" by Walter O. Noyes, P.E. 12-18-90

FIGURE 2 - SAMPLING LOCATION SKETCH  
CALDER & RICHARDSON SITE  
BARRE, VERMONT

THE JOHNSON COMPANY, INC.  
Environmental Sciences and Engineering  
MONTPELIER, VERMONT

Table 1 - Summary of Results

<u>Sample No.</u>	<u>Total Petroleum Hydrocarbon(ppm)</u>	<u>Sample Depth(cm)</u>
SS1	82	40
SS2	B.D.L	0 - 10
SS3	280	95
SS4	4500	53
SS5	490	0 - 10
SS6	23000	0 - 15
SS6D	25000	0 - 15
SS7	1400	15 - 30
SS8	1800	15 - 30
SS9	2300	15 - 30
SS10	12000	50

Notes:

1. B.D.L. = BELOW DETECTION LIMIT



### 3.0 CONCLUSIONS

The state has no formal enforcement level for TPH contamination, however 10 V.S.A Chapter 159 Sections 6612, 6615 and 6617 require that the Agency of Natural Resources be notified of a suspected release of hazardous materials (Appendix D).

Based on the information collected to date, it is apparent that soil contamination exists on the site. The only way to quantify the extent of this contamination and assess its probable remedial cost would be to perform additional soils sampling and implement a groundwater sampling program involving monitoring wells. The Johnson Company recommends additional sampling be performed on the soils and groundwater on this site in the form of a Level II Environmental Site Assessment to determine the extent of the contamination which is present and its impact on groundwater or surface waters. In addition, since waste oils and solvents were found on the site, we recommend the analyte list be broadened to include volatile organic compounds and metals.

The conclusions presented in this report are based on a site inspection, a limited historical review, and communications with representatives of the Department of Environmental Conservation and laboratory testing performed on soils samples collected on-site. If any variations occur, or if site conditions differ from what is presented here, The Johnson Company, Inc., should be contacted so that supplemental recommendations can be furnished.

*APPENDIX A*

*Exhibit A - 1 Environmental Questionnaire*

EXHIBIT A - 1

**ENVIRONMENTAL QUESTIONNAIRE**  
(Used for any new development and all existing  
non-industrial or non manufacturing facilities)

**(PRIVILEGED AND CONFIDENTIAL)**

**INSTRUCTIONS:** Please complete the following questionnaire as completely as possible. If you have any questions about how to answer the question, answer to the best of your ability, and indicate your question. If additional pages are necessary to fully respond to the question, please mark each page "Privileged & Confidential" and attach them to this questionnaire. Also, please attach copies of any requested documents. If copies cannot be made, please indicate that, and have the originals available for review during our visit to your Facility.

**I GENERAL BACKGROUND INFORMATION:**

1. Address of Facility:  
11 Mill St., Barre, Vt. 05641

(TELEPHONE) 802/476-3194  
(COUNTY) WASHINGTON

2. Name and position of person responding to this Questionnaire:  
Allan L. Merrill, Vice President

3. Describe the general character of the Facility site and the surrounding area (including terrain, location of wetlands, coastlines, rivers, streams, lakes, springs, drinking water wells, roads, water intake and discharge structures, landmarks, flood plains, etc.):  
Bulk petroleum storage for retail fuel company, warehouse and truck storage. Located in Barre, Vt., (see site plan attached).

4. Describe the Facility (including the age and date of construction of the Facility or its structures) and each of its operations or processes: Three (3) 20,000 gal. tanks, two (2) 15,000 gal. tanks, two (2) 5,000 gal. storage tanks. Welded steel, with steel supports. Age of tanks unknown. Used for storage for company use only.

5. Describe all known former uses of the Facility, whether carried out under the current ownership, or any prior ownership:  
Former owner FILLING STATION SUPPLY, retail and wholesale lube oils, gasoline and aviation gasoline. Acquired in 1980 by Calder & Richardson.

6. Does any person, firm or corporation other than the owner occupy the site or any part of it? If yes, identify them and describe their use of the property.

NO

7. Have there been any spills, releases, or unpermitted discharges at or near the Facility (including neighboring properties)? If so, describe; and attach any incident reports and the results of any investigations:

NONE

8. Has the Facility ever been the subject of any enforcement actions by any federal, state, or local government entities, or does the Facility have knowledge of any contemplated enforcement actions? If so, state the results of the enforcement action (consent order, penalties, no action, etc.) and describe the circumstances:

NO

9. Is the Facility now under any state, federal or local agency orders or consent decrees? If so, attach them to this response.

NO

10. Have there been any formal or informal citizen complaints regarding the Facility? If so, did they result in the filing of a notice of citizen suit, or a civil complaint, or other administrative or criminal procedure? If so, describe in full detail:

NO

## II. SOLID AND HAZARDOUS WASTES:

11. Does the facility generate any solid or hazardous wastes? If so, provide the Facility's EPA (or State) identification number \_\_\_\_\_. NO

12. Does the facility have any RCRA Hazardous Waste Permits? If so, please attach to this questionnaire.

NO

- a) Generator
- b) Transporter
- c) Treatment, Storage, Disposal Facility

13. Have any of the Facility's solid or hazardous wastes been analyzed? If so, attach the results of any analyses done on those wastes.

N/A

14. Identify the transporter of any hazardous wastes, and attach a copy of the transporter's permits and invoices from the last two years for the transport of wastes.

N/A

15. Identify the solid or hazardous waste disposal or treatment facilities which receive the Facility's wastes, and attach a copy of the applicable permits and invoices from the last two years.

N/A

16. Does the Facility treat or dispose of any wastes on site (including without limitation incineration, reclamation, neutralization or recovery)? If so, describe in full, and attach any applicable permits.

N/A

17. Attach copies of the hazardous waste manifests for the last two years and all annual/biennial reports on hazardous wastes.

N/A

18. Does the Facility transfer, incinerate, process, or store any non-hazardous solid wastes or hazardous wastes, other than refuse-derived fuel or waste oil, which is generated off-site? If so, describe:

NO

19. Does the Facility accumulate and store any hazardous wastes on site for disposal for longer than 90 days? If so identify the substance, the quantity and describe how it is stored:

NO

20. Identify all hazardous wastes generated at the facility, and as to each, state its hazardous characteristics (toxicity, reactivity, corrosivity, ignitability) and whether it is a listed hazardous waste:

NO

III. SURFACE WATER/WATER QUALITY/DISCHARGE TO MUNICIPAL SEWAGE TREATMENT PLANT:

21. Identify and attach all permits at the Facility relating to all Facility discharges to water, including discharges of wastewater, process water, contact or non-contact cooling water, storm water, as well as water from cafeterias and restrooms.

N/A

22. Has the Facility tested the groundwater at or around its Facility? If so, attach all analytical results.

NO

23. If any questionnaires have been completed and submitted to any federal, state, or local agencies relating to water, including industrial pretreatment questionnaires, please attach them.

NO

24. Is any waste deposited in or near surface or groundwaters? If so, describe in detail, including not only the receiving water's classification, but a description of the type and quantity of the wastes.

NO

25. Attach copies of the Facility's Discharge Monitoring Reports for the last two years, if the Facility is required by regulation to complete such reports.

N/A

IV. AIR POLLUTION:

26. Are there any air emission sources that emit contaminants from the Facility? If so, describe each such source, including whether it is a stationary combustion installation, process source, exhaust or ventilation system, incinerator, or other source:

NO

27. Are any of the sources permitted? If so, attach each such permit.

V. SPILLS AND UNDERGROUND STORAGE TANKS:

28. List and describe all above and below ground storage tanks used to store petroleum or gasoline products, or other chemicals or wastes, including the contents and capacity of each tank:

- (1) 275 Gal. fuel tank, heating truck garage
- (1) 275 gal. fuel tank, heating warehouse office
- (1) 550 gal. gasoline tank, underground in use
- (1) 1,000 gal. gasoline tank underground, out of service

29. List ALL underground storage tanks on site, even if they are not now in service, and state whether any notification has been filed with the local, state or federal government concerning existence of those tanks.

- (1) 550 gal. underground, in service
- (1) 1,000 gal. underground, out of service

Permit filed with State of Vermont #4763194

30. Have there been any leaks, spills, releases or other discharges (including loss of inventory) associated with any of these tanks? If so, give full details, including the response taken, all analytical results or reports developed through investigation (whether internal or external), and the agencies which may have become involved.

NO

VI. POLYCHLORINATED BIPHENYLS ("PCB'S") AND ASBESTOS:

31. Provide any records the Facility has concerning any on-site PCBs or PCB equipment, whether used or stored, and whether produced as a byproduct of the manufacturing process or otherwise. (PCBs are generally associated with transformers or capacitors, circuit breakers, voltage regulators, switches or cables.)

N/A

32. Have there been any PCB spills, discharges or other accidents? If so relate all the circumstances:

N/A

33. Does the Facility have any asbestos containing materials, including materials used to construct the building? If so, list:

N/A

SUBMITTED BY:

CALDER & RICHARDSON, INC.

(Firm/Company Name/Corporation)

Allan L. Merrill

(BY)

Vice President

(Title)



(Signature)

4/24/91

(Date)

EXHIBIT.A-1



*APPENDIX B*

*Chain of Custody Forms*

## CHAIN OF CUSTODY RECORD

Client/Project Name <b>Calder &amp; Richardson</b>			Project Location <b>Barre VT</b>			ANALYSES  <b>TPH</b>						REMARKS	
Project No. <b>1-0726-1</b>			Field Logbook No.										
Sampler: (Signature) <i>[Signature]</i>			Chain of Custody Tape No. <b>563</b>										
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample									
SS1	4/17/91			Soil	X								not preserved
SS2	↑			"	X								" "
SS3				"	X								" "
SS4				"	X								" "
SS5				"	X								" "
SS6				"	X								" "
SS6 dup	↓			"	X								" "
SS7	4/17/91			"	X								" "
Relinquished by: (Signature) <i>[Signature]</i>				Date 4/17/91	Time 17:00	Received by: (Signature) <i>[Signature]</i>				Date 4/18/91	Time 7:30		
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time		
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature) <i>[Signature]</i>				Date 4/18/91	Time 2:10 am		
Sample Disposal Method:				Disposed of by: (Signature) <i>[Signature]</i>				Date				Time	
SAMPLE COLLECTOR				ANALYTICAL LABORATORY									
5 State Street Montpelier, VT 05602 (802) 229-4600 Fax: (802) 229-5876				<b>THE JOHNSON COMPANY, INC.</b> <b>Environmental Science and Engineering</b>									

# CHAIN OF CUSTODY RECORD

Client/Project Name <i>Corder Richardson</i>			Project Location <i>Barre, VT</i>			ANALYSES						REMARKS	
Project No. <i>1-0726-1</i>			Field Logbook No.										
Sampler: (Signature) <i>Lisa Martyn</i>			Chain of Custody Tape No. <i>563</i>										
Sample No./ Identification	Date	Time	Lab Sample Number	Type of Sample									
<i>SS 8</i>	<i>4/17/91</i>			<i>Soil</i>	<i>X</i>							<i>Not preserved</i>	
<i>SS 9</i>	<i>4/17/91</i>			<i>soil</i>	<i>X</i>							<i>"</i>	
<i>SS 10</i>	<i>4/17/91</i>			<i>Soil</i>	<i>X</i>							<i>"</i>	
Relinquished by: (Signature) <i>Lisa Martyn</i>				Date <i>4/17/91</i>	Time <i>17:00</i>	Received by: (Signature) <i>Lise St Laurent</i>				Date <i>4/12/91</i>	Time <i>7:30</i>		
Relinquished by: (Signature)				Date	Time	Received by: (Signature)				Date	Time		
Relinquished by: (Signature)				Date	Time	Received for Laboratory: (Signature) <i>Robert of the...</i>				Date <i>4/18/91</i>	Time <i>8:10 am</i>		
Sample Disposal Method:				Disposed of by: (Signature)				Date		Time			
SAMPLE COLLECTOR				ANALYTICAL LABORATORY									
5 State Street Montpelier, VT 05602 (802) 229-4600 Fax: (802) 229-5876				<b>THE JOHNSON COMPANY, INC.</b> Environmental Sciences and Engineering									

*APPENDIX C*

*Scitest Analytical Services - Analytical Results*



P.O. Box 339  
Randolph, Vermont 05060-0339  
(802) 728-3376

### LABORATORY REPORT

CLIENT NAME:	JOHNSON CO.	LABORATORY NO.:	505-91
ADDRESS:	5 State Street Montpelier, VT 05602	PROJECT NO.:	78611
LOCATION:	Calder & Richardson	DATE OF SAMPLE:	4/17/91
ATTENTION:	Al Huizenga	DATE OF RECEIPT:	4/18/91
		DATE OF REPORT:	5/29/91

Petroleum Hydrocarbon Results  
(Expressed as micrograms per gram [ug/g] dry weight)

<u>Location</u>	<u>Results, ug/g</u>	<u>Detection Limit, ug/g</u>
S-1	82	74
S-2	BDL	79
S-3	280	69
S-4	4,500	1,700
S-5	490	63
S-6	23,000	3,300
S-6 Dup.	25,000	3,900
S-7	1,400	390
S-8	1,800	330
S-9	2,300	390
S-10	12,000	1,800

BDL = Below Detection Limit

Respectfully submitted,

SCITEST, INC.

*Roderick J. Lamothe*  
Roderick J. Lamothe  
Laboratory Director

RJL/cha

**RECEIVED**

MAY 30 1991

THE JOHNSON CO., INC.  
MONTPELIER, VERMONT

*APPENDIX D*

*10 V.S.A. Chapter 159 Sections 6612, 6615, and 6617*

issued shall be given the opportunity for a hearing with five business days of the date of the order is issued. — Added 1983, No. 148 (Adj. Sess.), § 7; amended 1987, No. 78, § 13; 1987, No. 282 (Adj. Sess.), § 19.

#### History

Revision note. Deleted "Orders" preceding "Hazardous wastes" in the section catchline to conform to V.S.A. style.

Amendments — 1987 (Adj. Sess.). Designated the existing provisions of the section as subsec. (a), added "after notice and opportunity for hearing" preceding "issuing" in subdv. (1) of that subsection, and added subsec. (b).

— 1987. Rewrote the section catchline, inserted "solid or" preceding "hazardous", substituted "the secretary" for "he" preceding "determines to be necessary" and deleted "to protect the health of such persons or the environment" thereafter in the first sentence of the introductory paragraph, and deleted "hazardous" preceding "wastes" in subdv. (2)(C).

Cross references. Contested cases, see §§ 809-812 of Title 3.

1. Cited. Cited in *In re Catamount Dyers, Inc.*, 50 B.R. 790 (Bkrcty. D.Vt. 1985).

#### § 6611. Financial responsibility

(a) Any person who operates a facility approved under this chapter shall provide evidence of financial responsibility in such form and amount as the secretary may determine to insure that, upon abandonment, cessation, or interruption of the operation of the facility, adequate funds are available to undertake all appropriate measures to prevent present and future damage to the public health and safety and to the environment.

(b) A solid waste management district, by contract, may require that a facility owner or operator that serves the district, establish an escrow account in a reasonable amount in order to provide funds for timely compliance with the provisions of this chapter. Expenditures from the escrow account shall be for those capital improvements required to be made by the owner by the certification, interim certification or order issued or otherwise required in accordance with this chapter. — Added 1977, No. 106, § 1; amended 1987, No. 78, § 14; 1987, No. 246 (Adj. Sess.), § 5a, eff. June 13, 1988.

#### History

Amendment — 1987 (Adj. Sess.). Designated the existing provisions of the section as subsec. (a) and added subsec. (b).

— 1987. Substituted "facility" for "landfill" preceding "approved under", deleted "the rules promulgated in section 6603 of" thereafter, substituted "facility, adequate funds are available to undertake" for "landfill" preceding "all appropriate measures" and deleted "are taken" thereafter.

#### § 6612. Penalties

(a) Any person who violates any provision of this chapter, the rules promulgated herein or the terms or conditions of any order of certification granted by the secretary, shall be subject to a criminal penalty not to exceed \$25,000.00 or imprisonment for not more than six months, or both.

(b) Any person who violates any provision of this chapter relating to solid or hazardous waste management, the regulations promulgated thereunder, or the terms or conditions of any order relating to solid or hazardous waste management or terms and conditions of any solid or hazardous waste facility certification, shall be subject to a civil penalty not to exceed \$10,000.00.

(c) Each violation may be a separate and distinct offense and, in the case of a continuing violation, each day's continuance thereof may be deemed a separate and distinct offense. — Added 1977, No. 106, § 1; amended 1981, No. 102, § 1; 1983, No. 148 (Adj. Sess.), § 8; 1987, No. 78, § 15.

#### History

Amendments — 1987. Subsection (b): Inserted "solid or" preceding "hazardous" throughout the subsection.

— 1983 (Adj. Sess.). Amended section generally.

— 1981. Substituted "\$25,000.00" for "\$5,000.00" following "not to exceed" in the first sentence.

#### § 6613. Variances

(a) A person who owns or is in control of any plant, building, structure, process or equipment may apply to the board for a variance from the rules of the secretary. The board may grant a variance if it finds that:

(1) The variance proposed does not endanger or tend to endanger human health or safety; and

(2) Compliance with the rules from which variance is sought would produce serious hardship without equal or greater benefits to the public.

(3) The variance granted does not enable the applicant to generate, transport, treat, store, or dispose of hazardous waste in a manner which is less stringent than that required by the provisions of Subtitle C of the Resource Conservation and Recovery Act of 1976, and amendments thereto, codified in 42 U.S.C. Chapter 82, subchapter 3, and regulations promulgated under such subtitle.

(b) No variance shall be granted pursuant to this section except after public hearing on due notice and until the board has considered the relative interests of the applicant, other owners of property likely to be affected, and the general public.

(c) Any variance or renewal thereof shall be granted within the requirements of subsection (a) of this section and for time periods and under conditions consistent with the reasons therefor, and within the following limitations:

(1) If the variance is granted on the ground that there is no practicable means known or available for the adequate prevention, abatement or control of the air and water pollution involved, it shall be only until the necessary practicable means for prevention, abatement or control become known and available, and subject to the taking of any substitute or alternate measures that the board may prescribe.

(2) If the variance is granted on the ground that compliance with the particular requirement or requirements from which variance is sought will necessitate the taking of measures which, because of their extent or cost, must be spread over a considerable period of time, it shall be for a period not to exceed such reasonable time as, in the view of the board, is requisite for the taking of the necessary measures. A variance granted on the ground specified herein shall contain a time schedule for the taking of action in an expeditious manner and shall be conditioned on adherence to the time schedule.

(3) If the variance is granted on the ground that it is justified to relieve or prevent hardship of a kind other

than that provided for in subdivisions (1) and (2) of this subsection, it shall be for not more than one year.

(d) Any variance granted pursuant to this section may be renewed on terms and conditions and for periods which would be appropriate on initial granting of a variance. If complaint is made to the agency of environmental conservation on account of the variance, no renewal thereof shall be granted, unless following public hearing on the complaint on due notice, the board finds that renewal is justified. No renewal shall be granted except on application therefor. The application shall be made at least sixty days prior to the expiration of the variance. Immediately upon receipt of an application for renewal the agency shall give public notice of the application in accordance with rules of the agency.

(e) A variance or renewal shall not be a right of the applicant or holder thereof but shall be in the discretion of the agency. However, any person adversely affected by a variance or renewal granted by the agency may obtain judicial review thereof by a proceeding in the appropriate court.

(f) This section does not limit the authority of the secretary under section 6610 of this title concerning imminent hazards from solid waste, nor under section 6610a of this title concerning hazards from hazardous waste and violations of statutes, rules or orders relating to hazardous waste. — Added 1979, No. 197 (Adj. Sess.), § 4, eff. May 6, 1980; amended 1983, No. 148 (Adj. Sess.), §§ 9, 10.

#### History

Revision note. Reference in subsec. (f) to "section 6610" changed to "section 6610 of this title" and reference to "section 6610a" changed to "section 6610a of this title" to conform references to V.S.A. style.

Amendments — 1983 (Adj. Sess.), Subdivision (a)(3): Added. Subsection (f): Amended generally. § 6615.

#### § 6615. Liability

(a) Subject only to the defenses set forth in subsections (d) and (e) of this section,

(1) the owner or operator of a facility, or both;

(2) any person who at the time of release or threatened release of any hazardous material owned or operated any facility at which such hazardous materials were disposed of;

(3) any person who by contract, agreement, or otherwise arranged for disposal or treatment, or arranged with a transporter for transport for disposal or treatment, of hazardous materials owned or possessed by such person, by any other person or entity, at any facility owned or operated by another person or entity and containing such hazardous materials; and

(4) any person who accepts or accepted any hazardous materials for transport to disposal or treatment facilities selected by such person, from which there is a release, or a threatened release of hazardous materials shall be liable for:

(A) abating such release or threatened release, and

(B) costs of investigation, removal and remedial actions incurred by the state which are necessary to protect the public health or the environment.

(b) In the event that the responsible person or person fails to act in a timely manner to take the necessary removal and remedial actions, the secretary may take such actions, order the responsible person or persons to act, or seek a court order requiring such actions. Any responsible person who fails to comply with such a court order shall be liable in an amount equal to three times the cost of such removal. Funds recovered under this section shall be deposited in the environmental contingency fund established under section 1283.

(c) In any suit to enforce claims of the state under this section, it is not necessary for the state to plead or prove negligence in any form or manner on the part of the person specified in subsection (a) of this section. The state need only plead and prove the fact of the release or threatened release and that the person in question was as specified in subsection (a), or that the release or threatened release occurred at or involved any real property, structure, equipment or conveyance under the control of that person. Any person who has released hazardous material as specified under subsection (a), or is in any way responsible for any hazardous materials which the agency has removed or is removing pursuant to 10 V.S.A. § 1283(b) shall be strictly liable, jointly and severally, without regard to fault, for all cleanup, removal and remedial costs. Where hazardous materials released by one person are or may be mixed with those released by another, the strict liability established under this section shall be with respect to the cleanup, removal and remedial costs of all the materials involved; provided however, it shall be a defense to joint and several liability under this section if the responsible person establishes by a preponderance of the evidence that he or she is responsible for only a certain portion of the costs of the cleanup, removal and remedial action, considering such factors as the volume and toxicity of the material contributed by the person to the release, then that person's liability shall be limited to the amount so established. In an action brought by the secretary under this section, a responsible person may implead, or in a separate action a responsible person may sue, another responsible person or persons and may obtain contribution or indemnification. Operators of municipal landfills or persons operating landfills on behalf of municipalities shall not be jointly and severally liable under this section to the extent that they are acting as landfill operator. Generators of household waste, as defined by rule of the secretary, shall not be liable under this section.

(d) There shall be no liability under this section for a person otherwise liable who can establish by a preponderance of the evidence that the release or threat of release of hazardous material and the damages resulting therefrom were caused solely by any of the following:

- (1) an act of God;
- (2) an act of war;
- (3) an act or emission of a third party other than an employee or agent of the defendant, or other than one



whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant. If the sole contractual arrangement arises from a published tariff and acceptance for carriage by a common carrier by rail, for purposes of this section, there shall be considered to be no contractual relationship at all. This subdivision (3) shall only serve as a defense if the defendant establishes by a preponderance of the evidence:

(A) that the defendant exercised due care with respect to the hazardous material concerned, taking into consideration the characteristics of that hazardous material, in light of all relevant facts and circumstances; and

(B) that the defendant took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from those acts or omissions; or

(4) any combination of the above.

(c) Any person who is the owner or operator of a facility where a release or threatened release existed at the time that person became owner or operator shall be liable unless he or she can establish by a preponderance of the evidence that after making diligent and appropriate investigation of the facility, he or she had no knowledge or reason to know that said release or threatened release was located on the facility.

(f) Nothing in this chapter shall be deemed to preclude the pursuit of any other civil or injunctive remedy by any person. The remedies in this chapter are in addition to those provided by existing statutory or common law. — Added 1985, No. 70, § 4, eff. May 20, 1985.

#### History

Revision note. In the first sentence of subsec. (c), substituted "subsection (a) of this section" for "subsection (a)" to conform reference to V.S.A. style.

#### Law Review Commentaries

For note relating to successor landowner liability for damages and cleanup costs for hazardous wastes deposited on property, see 10 Vt. L.Rev. 487 (1985).

#### § 6616. Release prohibition

The release of hazardous materials into the surface or groundwater, or onto the land of the state is prohibited. This section shall not apply to releases of hazardous materials pursuant to and in compliance with the conditions of a state or federal permit. — Added 1985, No. 70, § 5, eff. May 20, 1985.

#### § 6617. Persons responsible for release; notice to agency

Any person who has knowledge of a release or a suspected release and who may be subject to liability for a release, as detailed in section 6615 of this chapter, shall immediately notify the agency. Failure to notify shall make those persons liable to the penalty provisions of section 6612 of this chapter. — Added 1985, No. 70, § 6, eff. May 20, 1985.

#### § 6618. Solid waste management assistance fund

(a) There is hereby created in the state treasury a fund to be known as the solid waste management assistance fund, to be expended by the secretary of the agency of natural re-

sources. The fund shall consist of the franchise tax on waste facilities assessed under the provisions of 32 V.S.A. chapter 151, subchapter 13, and appropriations of the general assembly. All balances in the fund at the end of any fiscal year shall be carried forward and remain a part of the fund. Interest earned by the fund shall be deposited into the fund. Disbursements from the fund shall be made by the state treasurer on warrants drawn by the commissioner of finance and management.

(b) The secretary may authorize disbursements from the fund for the purpose of enhancing solid waste management in the state in accordance with the adopted waste management plan. This includes:

(1) the costs of planning, design, obtaining permits, construction and operation of state or regional facilities for the processing of recyclable materials and of waste materials that because of their nature or composition create particular or unique environmental, health, safety or management problems at treatment or disposal facilities;

(2) the costs of assessing existing landfills, and eligible costs for closure and any necessary steps to protect public health at landfills certified or operating after December 31, 1979 and before January 1, 1987, provided those costs are the responsibility of the municipality or solid waste management district requesting assistance;

(3) the costs of preparing the state waste management plan;

(4) hazardous waste pilot projects consistent with this chapter;

(5) the costs of developing markets for recyclable material; and

(6) the costs of the agency of natural resources in administering functions that may be supported by the fund established in subsection (a) of this section.

(c) The secretary shall annually allocate from the fund the amounts to be disbursed for each of the functions described in subsection (b) of this section. The secretary, in conformance with the priorities established in this chapter, shall establish a system of priorities within each function when the allocation is insufficient to provide funding for all eligible applicants. — Added 1987, No. 78, § 16.

#### History

Revision note. References to "agency of environmental conservation" at the end of the first sentence of subsec. (a) and at the beginning of subdv. (b)(6) were changed to "agency of natural resources" pursuant to 1987, No. 76, § 18.

Reference to "commissioner of finance" at the end of the fifth sentence of subsec. (a) was changed to "commissioner of finance and management" in view of 1983, No. 195 (Adj. Sess.), § 5(b), which renamed the commissioner of finance as the commissioner of finance and information support, and Executive Order No. 35, which provided for the abolition of the department of finance and information support and the transfer of the duties, responsibilities and authority of the commissioner of finance and information support to the commissioner of the department of finance and management as established by the order. By its own terms, Executive Order No. 35 shall take effect on July 1, 1987, pursuant to section 2002 of Title 3. For the text of Executive Order No. 35, see chapter 1 of Title 3 Appendix.

At the end of subdv. (b)(6), substituted "subsection (a) of this section" for "subsection (a)" to conform reference to V.S.A. style.

## **APPENDIX B**

## THE JOHNSON COMPANY, INC.

**Environmental Sciences and Engineering**

November 9, 1994

Mr. Marc Coleman  
Vermont Department of Environmental Conservation  
Underground Storage Tank Program  
103 South Main Street  
Waterbury, Vermont 05671-0404

Re: UST Removal at Calder & Richardson, 11 Mill Street, Barre, Vermont  
JCO # 1-0396-1 (305)

Dear Marc:

On November 8, 1994, one 550 gallon underground gasoline storage tank (UST) and one 1,000 gallon gasoline UST were removed from the northwest side of the Calder and Richardson facility office/warehouse building at 11 Mill Street, Barre, Vermont. (See the site sketch on the attached form.) The Vermont Department of Environmental Conservation Underground Storage Tank (DEC UST) Program Tank Pull Forms for this UST removal are attached. The age of these registered USTs was approximately 28 years.

Northland Petroleum was hired to pump, excavate, clean and dispose of the USTs. The Johnson Company was present on behalf of Calder and Richardson to complete the site assessment for the UST removal.

Approximately 40 gallons of gasoline/water was pumped from the two tanks prior to the removal of the tanks. Most of this mixture was gasoline, with a thin layer of water at the bottom of each UST.

As the USTs were being excavated, the soils that were removed from above and beside the tanks were continuously screened with a photoionization detector (PID). A Model 580B Thermo Environmental Instruments OVM PID was used for this assessment. The PID was calibrated at the site on the morning of the site work, using 100 ppm isobutylene gas. The observed fill materials consists of loamy sand with approximately 20 percent stone-sized granite grout. PID headspace readings of the soil around and above the 550 gallon UST were typically in the range of 250 to 500 parts per million (ppm). Soil from a few areas around the UST and its piping showed PID headspace readings as high as 700 to 800 ppm. After the UST was removed from the excavation, soils from under the UST were examined. The underlying soils consist of loamy sand, and PID headspace readings from 9 to 12 feet below the ground surface (bgs) ranged from 24 to 47 ppm. Groundwater was not encountered in the excavation, although an attempt to locate it was made, during which the excavation was extended to approximately 14 feet bgs. Due to the narrow space in which the USTs were located (between the building and the Stevens Branch) it was not possible to dig deeper than 14 feet bgs. Based on the location of the Stevens Branch, which is approximately 15 feet northwest of the former UST location, it appears that groundwater flow direction is to the northwest. No sheens, free product or hazardous concentrations of vapors were evident in the excavation. Bedrock was not encountered in the excavation, and is not evident in the immediate vicinity.

The soils encountered around and under the 1,000 gallon UST registered lower vapor concentrations than those around the 550 gallon UST. PID headspace readings around this UST ranged from 2 to 40 ppm, but were typically under 10 ppm. The soils under the UST provided PID headspace readings of less than 10 ppm.

Mr. Marc Coleman  
Vermont Department of Environmental Conservation  
Waterbury, Vermont

November 9, 1994  
Page 2

The condition of the USTs appeared to be relatively good, with no visible holes. Some rusting and slight pitting of the bottom and sides of the tanks were noted. Based on the UST condition and the nature of the soil contamination around the UST, it appears that much of the release of gasoline at this site is attributable to leaking associated with the piping system. The pumps for these tanks were located at the northern corner of the building, and the soils under the pumps and along the pipes leading to the pumps registered PID headspace levels ranging from 247 to 408 ppm.

Based on the extent of the soil contamination around the 550 gallon UST and potential structural concerns (due to the proximity to the building and a stone retaining wall beside the Stevens Branch), it was determined that the most appropriate immediate action was to return the excavated soils to the hole created by the UST removal and consider a later investigation to better characterize the extent of the soil and possible groundwater contamination in this area.

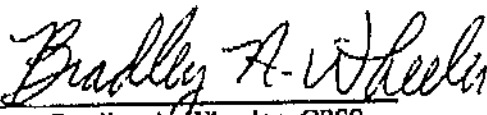
We request that the SMS make a determination regarding the eligibility of this site under the Petroleum Cleanup Fund.

Please call if you have any questions regarding this site.

Sincerely,

THE JOHNSON COMPANY, INC.

By:



Bradley A. Wheeler, CPSS  
Senior Scientist

cc: Allan Merrill, Calder and Richardson

EAW

VERMONT DEPARTMENT OF ENVIRONMENTAL CONSERVATION  
UNDERGROUND STORAGE TANK PROGRAM  
TANK PULL FORM

TODAY'S DATE: 11/8/94

INSPECTOR: Brad Wheeler  
The Johnson Company

DATE OF REMOVAL: 11/8/94

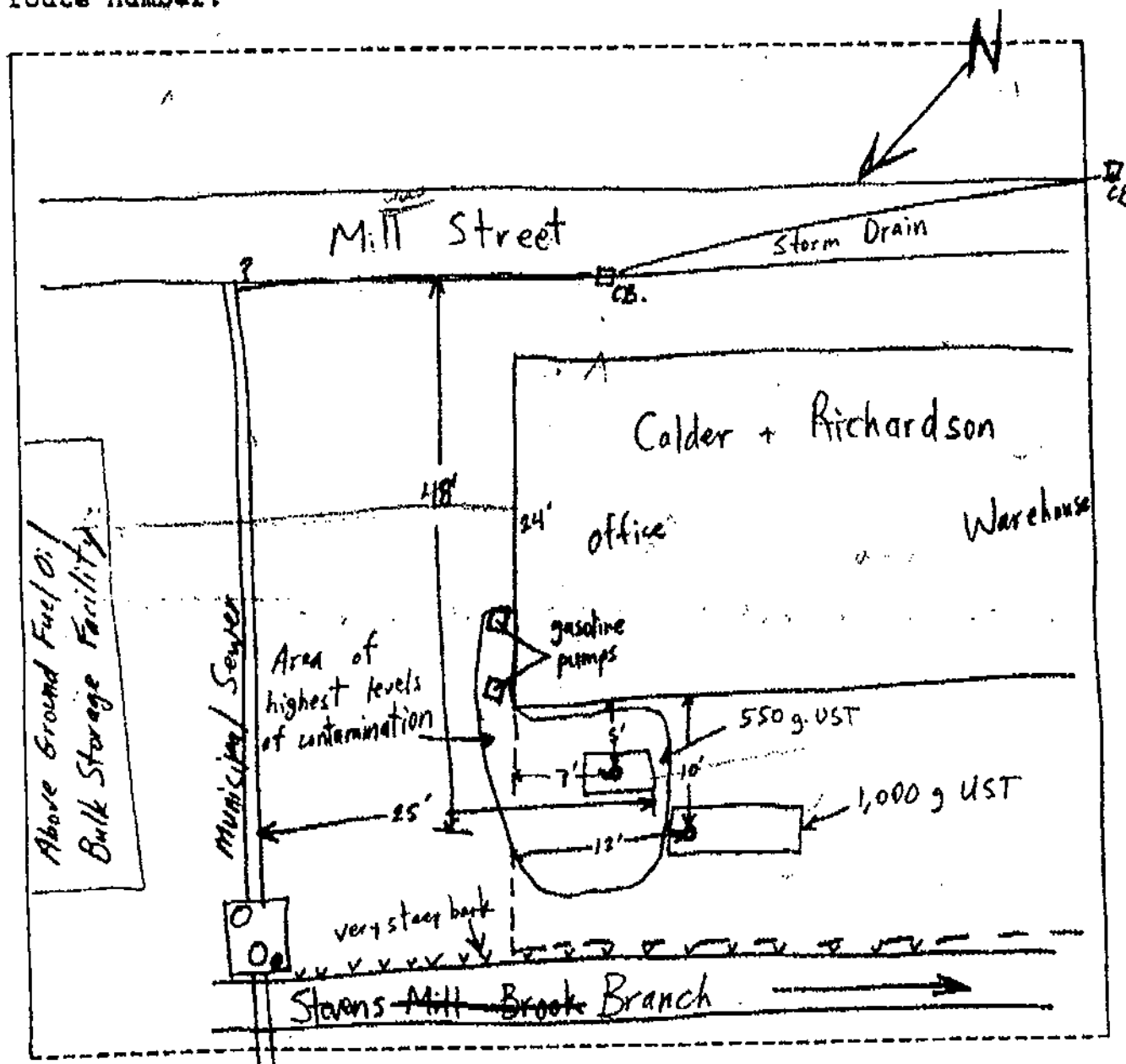
BUSINESS NAME: Calder + Richardson

11 Mill Street

Barre, VT

SITE DIAGRAM

Show location of all tanks and distance to permanent structures, sample points, areas of contamination and any pertinent site information. Indicate North arrow and major street names or route number.



IV. AIR POLLUTION:

26. Are there any air emission sources that emit contaminants from the Facility? If so, describe each such source, including whether it is a stationary combustion installation, process source, exhaust or ventilation system, incinerator, or other source:

NO

27. Are any of the sources permitted? If so, attach each such permit.

V. SPILLS AND UNDERGROUND STORAGE TANKS:

28. List and describe all above and below ground storage tanks used to store petroleum or gasoline products, or other chemicals or wastes, including the contents and capacity of each tank:

- (1) 275 Gal. fuel tank, heating truck garage
- (1) 275 gal. fuel tank, heating warehouse office
- (1) 550 gal. gasoline tank, underground in use
- (1) 1,000 gal. gasoline tank underground, out of service

29. List ALL underground storage tanks on site, even if they are not now in service, and state whether any notification has been filed with the local, state or federal government concerning existence of those tanks.

- (1) 550 gal. underground, in service
  - (1) 1,000 gal. underground, out of service
- Permit filed with State of Vermont #4763194

30. Have there been any leaks, spills, releases or other discharges (including loss of inventory) associated with any of these tanks? If so, give full details, including the response taken, all analytical results or reports developed through investigation (whether internal or external), and the agencies which may have become involved.

NO

VI. POLYCHLORINATED BIPHENYLS ("PCB'S") AND ASBESTOS:

31. Provide any records the Facility has concerning any on-site PCBs or PCB equipment, whether used or stored, and whether produced as a byproduct of the manufacturing process or otherwise. (PCBs are generally associated with transformers or capacitors, circuit breakers, voltage regulators, switches or cables.)

N/A

Date of Removal: 11/8/94 Date of Assessment: 11/8/94  
Person & Company Doing Assessment: Brad Wheeler, The Johnson Co.  
Telephone Number: 279-4600

Business Name Where Tank(s) Located: Calder + Richardson  
Number of Employees:  
Street Address & Town/City: 11 Mill St. Barre, VT

Owner of Tank(s): Calder + Richardson  
Address: 164 So. Main St.  
Town/City: Barre, VT  
Contact Person: Allan Merrill  
Phone Number: 476-3194

UST Facility ID Number: 476-3194

Tank #	Product	Size	Condition
1	Gasoline	550	Fair - Good
2	Gasoline	1000	Fair - Good
3			
4			

Reason for Tank Removal (check one): ☐ abandoned ☐ routine replacement  
☐ tank or piping leaking ☒ liability

Replacement Tank(s)? ☐ yes ☒ no Number of Replacement Tanks: \_\_\_\_\_

DEC UST Permit(s) Obtained? ☐ yes ☒ no Above Ground Bulk Storage

DEC-Permitted Tank(s) Still On-Site? ☒ yes ☐ no Number of Tanks: \_\_\_\_\_

Out of Service Tank(s) On-Site? ☐ yes ☒ no Number of Tanks: \_\_\_\_\_

Heating Oil Tank(s) On-Site? ☐ yes ☒ no No. of Tanks: \_\_\_\_\_ Size(s): \_\_\_\_\_

Any Waste Pumpage? ☒ yes ☐ no Estimated Volume: 40 gallons  
Transported By: \_\_\_\_\_

Size of Excavation (ft<sup>2</sup>): 200 Depth: 10'-14' Soil Type: Sandy fill  
Concentrations Detected with PID: Peak = 804 Average = 200

Type of PID: Model 5808, Thermo Environmental CVM

Number of Readings (please put locations on attached drawing): 30-40

Calibration Info. (date, time, type of gas): 11/6/94, 7:50, 100ppm isobutylene

Free Phase Product Encountered? ☐ yes ☒ no Approx. Amount: \_\_\_\_\_

Cont. Soils Stockpiled? ☐ yes ☒ no Amount (yd<sup>3</sup>): \_\_\_\_\_

Cont. Soils Backfilled? ☒ yes ☐ no Amount (yd<sup>3</sup>): 30 yds

Groundwater Encountered? ☐ yes ☒ no Depth to Groundwater: > 14' bgs

Monitoring Wells Installed? ☐ yes ☒ no Number: \_\_\_\_\_ Screen Depth: \_\_\_\_\_

On-Site Drinking Well? ☐ yes ☒ no (If yes: ☐ rock ☐ gravel ☐ spring)

Public Water Supply Well(s) Within 1/4 Mile? ☐ yes ☒ no

Distance to nearest: ~ 7 miles

Private Water Supply Well(s) Within 1/4 Mile? ☐ yes ☒ no How Many? \_\_\_\_\_

Samples Collected for Laboratory Analysis? ☐ yes ☒ no How Many? \_\_\_\_\_

(check all that apply: ☐ soil ☐ groundwater ☐ drinking water)

Receptors Affected (check all that apply):

☒ soil ☐ residential; # of houses/people: \_\_\_\_\_

☐ groundwater ☐ surface water; name/type of water body: \_\_\_\_\_

Signature of Owner or Authorized Representative: \_\_\_\_\_

Date: 11/8/94

Signature of Person Performing Site Assessment: Bradley A. Wheeler

Date: 11/8/94

\*\*\* ATTACH OBSERVATIONS, CONCLUSIONS, AND DRAWING ON A SEPARATE PAGE \*\*\*

White - DEC File Copy Yellow - DEC File Copy Pink - Owner Copy

## APPENDIX C



## **HEALTH AND SAFETY PLAN**

This Health and Safety Plan is intended to comply with Occupational Safety and Health Administration (OSHA) requirements. This plan is applicable for sites where the major chemical contaminants suspected are: PETROLEUM PRODUCTS.

JOB NAME: Calder & Richardson, Inc.  
SITE LOCATION: 7-11 Mill Street  
Barre, Vermont

### **1.0 SITE DESCRIPTION/NATURE OF WORK**

- The SITE is a bulk storage facility and contains petroleum products such as No. 2 fuel oil, kerosene and gasoline. There are seven (7) above ground tanks and two former underground storage tanks (USTs) that were removed in November 1994. The two (2) USTs were used to store gasoline for refueling of fleet vehicles and are the focus of the Site Investigation being performed.
- A suitable road surface for a drill rig is to be constructed with using an excavator. Fill material will be brought to the site with dump trucks.
- The site investigation will include the installation of five (5) groundwater monitoring wells using an air rotary drill rig and sampling of soils and groundwater on site
- Periodic groundwater sampling may occur at the SITE.

DIG SAFE NOTIFIED?                      X YES    NO

BY WHOM: Twin State Environmental Corp.

DATE: At least 72 hrs. prior to subsurface investigations or excavations

PRIMARY LEVEL OF PROTECTION: D upgradeable to level C

MAP OF ROUTE TO NEAREST HOSPITAL ATTACHED:      See ATTACHMENT

## 2.0 EMERGENCY PHONE NUMBERS

LOCATION OF NEAREST PHONE: on SITE

SITE Owner: Calder & Richardson, Inc.  
Allan Merrill or Leonell Gregoire (802) 476-3194

HOSPITAL:

Name:	Central Vermont Hospital
Address:	Barre, Vermont
Phone Number:	(802) 371-4100

AMBULANCE: 9-1-1  
FIRE: 9-1-1  
POLICE: 9-1-1  
POISON CONTROL: 1-800-562-8236  
BURLINGTON POISON CENTER: (802) 658-3456  
VTHMMD: (802) 244-8721 (day) or 1-800-641-5005 (night)  
NATIONAL RESPONSE CENTER: 1-800-424-8802  
EPA (Information Line): 1-800-424-9346  
CHEMTREC: 1-800-424-9300

## 3.0 SITE HAZARDS

PETROLEUM PRODUCTS KNOWN OR SUSPECTED TO BE PRESENT:

- gasoline, No. 2 fuel oil, kerosene

SITE-SPECIFIC CONSIDERATIONS:

- Traffic is limited to vehicles entering and exiting the facility and along Mill Street. Truck drivers may have limited visibility.

PHYSICAL HAZARDS:

- Heavy machinery such as excavator, dump trucks, drill rig, electrical utilities, subsurface sewer.

CHEMICAL HAZARDS:

- Potentially explosive atmosphere
- Gasoline and other petroleum products have compounds that are known carcinogens.

NOISE HAZARDS:

Excavator and drill rig.

## 4.0 SITE PERSONNEL REQUIREMENTS

### HEALTH AND SAFETY TRAINING:

- All personnel to perform work on SITE or enter the remedial zone will be required to have OSHA certification conforming to 29CFR 1910.120.

## 5.0 SITE HEALTH AND SAFETY PROCEDURES

### PROCEDURES FOR SITE WORK:

- This SSP defines the requirements and designated protocols to be followed at the SITE during investigation activities.
- This SSP must be reviewed and signed by all personnel prior to entering the remedial or contaminant reduction zones on SITE.
- In the event that any worker, or visitor does not adhere to the provisions of the SSP he/she will be requested to leave the work area.

### ACTION LEVELS:

- Action levels are those concentrations at which an upgrade in personal protective equipment (PPE) is required. Volatile organic concentrations will be monitored in the field using a photoionization detector. Measurement will be taken in the breathing zone to determine whether an action level has been exceeded.

The action level for gasoline will be 100 ppm based on PID measurements in the breathing zone. This provides a level of safety since the Permissible Exposure Limit (PEL) for gasoline is 300 ppm and is based on a person working an 8 hr day for 40 hr/week.

Initial activities will be performed in Level D with upgrade capabilities to Level C if 100 ppm is exceeded in the breathing zone. A full-face respirator is necessary if levels exceed 100.0 ppm. If action levels are exceeded for Level B (>751.0 ppm) work will be stopped and re-evaluated.

<u>Concentration, ppm</u>	<u>PPE Required</u>
0.0 - 100.0	Level D
101.0 - 750.0	Level C
751.0 - 10,000.0	Level B

### PERSONAL PROTECTIVE EQUIPMENT:

- General work clothes, steel toe boots, hard hat, eye protection, hearing protection.

#### SITE CONTROL:

Control of the work SITE will be maintained with construction tape, traffic cones and/or physical barriers.

#### EQUIPMENT DECONTAMINATION:

Decontamination of equipment will be performed on SITE and the effluent water will be allowed to gather on a paved surface and evaporate.

#### PERSONAL DECONTAMINATION:

Decontamination measures for this project may include the use of a boot and glove wash with a non-phosphate detergent followed by a boot and glove rinse. All wash water and solid wastes generated throughout the implementation of this project will be disposed of properly. Specifically, wastes from this project will be disposed of as follows:

Solid wastes such as disposable PPE will be placed in an on-site receptacle (i.e. dumpster) for ultimate disposal as a non-regulated solid waste

#### EMERGENCY EQUIPMENT:

Fire extinguisher, first aid kit, and eye wash station.

#### FIRST AID:

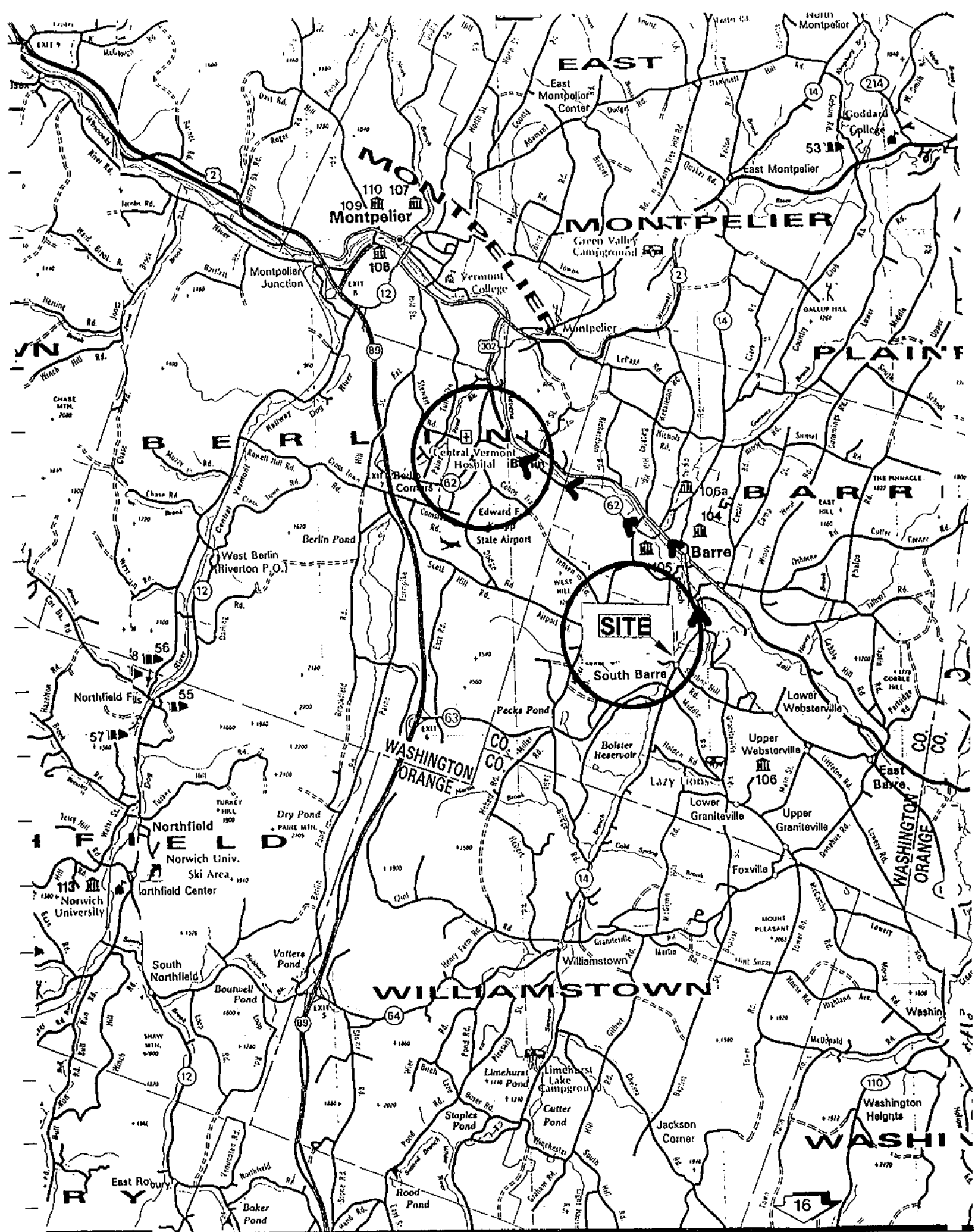
- Ingestion - Call Poison Control - Follow instructions.
- Inhalation - Remove person from contaminated environment. Seek medical attention.
- Skin Contact - Brush off dry material, remove contaminated clothing. Wash skin with soap and water. Seek medical attention if necessary.
- Eye Contact - Flush eyes with water for at least 15 minutes. Seek medical attention.

The following personnel are designated to carry out the stated job functions on site.

HEALTH AND SAFETY PLAN  
PREPARED BY: Kenneth J. Bisceglia

## 8.0 ON-SITE PERSONNEL

[illegible]






































## APPENDIX D

**TWIN STATE ENVIRONMENTAL CORP.**  
MONITORING WELL/SOIL BORING LOG

PAGE 1 OF 1

WELL/BORING NO.: TS-1	DEPTH OF WELL: 22.4 DEPTH OF BORING: 22.4 ft
PROJECT NAME: Calder & Richardson	DEPTH TO WATER: 13.95 ft
PROJECT NO.: 94171	SCREEN DIA.: 2 in. DEPTH: 12.4 - 22.4 ft
INSTALL DATE: 12/19/94	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: kjb	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling & Boring	RISER DIA.: 2 in. DEPTH: +2.5 to -12.4
DRILLING METHOD: Air Rotary	GUARD TYPE: Steel stand pipe 2.5 ft above surface grade
SAMPLING METHOD: Split spoon	RISER CAP: Expansion plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
1		8 - 10	14.5	3,15, 100 (3")	Brown silty SAND and GRANITE CHIPS, loose, damp (no odor)	 CEMENT GROUT
2						 NATIVE BACKFILL
3						 BENTONITE SEAL
4						
5						 SAND PACK
6						 WELL SCREEN
7						
8						
9						
10		20 - 22	<0.1	3,7,7,9 (2')	Brown silty fine SAND, loose, saturated (no odor)	 RISER PIPE
11						HS HEAD SPACE
12						 WATER LEVEL (APPROX)
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

**GRANULAR SOILS**  
BLOWS/FT DENSITY  
0-4 V.LOOSE  
4-10 LOOSE  
10-30 M.DENSE  
30-50 DENSE  
>50 V.DENSE

**COHESIVE SOILS**  
BLOWS/FT DENSITY  
<2 V.SOFT  
2-4 SOFT  
4-8 M.STIFF  
8-15 STIFF  
15-30 V.STIFF  
>30 HARD

**PROPORTIONS USED**  
TRACE 0-10%  
LITTLE 10-20%  
SOME 20-35%  
AND 35-50%

**NOTES:**

Located behind warehouse building.

kjb:\project\94171\crbl1.skd



**TWIN STATE ENVIRONMENTAL CORP.**  
**MONITORING WELL/SOIL BORING LOG**

PAGE 1 OF 1

WELL/BORING NO.: TS-2	DEPTH OF WELL: 16.4 ft DEPTH OF BORING: 22 FT
PROJECT NAME: Calder & Richardson	DEPTH TO WATER: 11.17 ft
PROJECT NO.: 94171	SCREEN DIA.: 2 in. DEPTH: 6.4 - 16.4 ft
INSTALL DATE: 12/19/94	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: kjb	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling & Boring	RISER DIA.: 2 in. DEPTH: 0.5 - 6.4 ft
DRILLING METHOD: Air Rotary	GUARD TYPE: Flush mount curb box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
1		8 - 10	<0.1	3,13,5,4 (12")	Brown silty SAND and GRANITE CHIPS, some coal nuggets, loose, moist (no odor)	CEMENT GROUT
2						NATIVE BACKFILL
3						BENTONITE SEAL
4						SAND PACK
5						WELL SCREEN
6						RISER PIPE
7						HS HEAD SPACE
8						WATER LEVEL (APPROX)
9						
10						
11		20 - 22	<0.1	4,3,4,4 (18")	Brown silty fine SAND, loose, saturated (no odor)	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

GRANULAR SOILS		COHESIVE SOILS		PROPORTIONS USED	
BLOWS/FT	DENSITY	BLOWS/FT	DENSITY	TRACE	0-10%
0-4	V.LOOSE	<2	V.SOFT	LITTLE	10-20%
4-10	LOOSE	2-4	SOFT	SOME	20-35%
10-30	M.DENSE	4-8	M.STIFF	AND	35-50%
30-50	DENSE	8-15	STIFF		
>50	V.DENSE	15-30	V.STIFF		
		>30	HARD		

NOTES:

Located behind northeast corner of warehouse building.

kjb:\project\94171\crl\bl2.shd

**TWIN STATE ENVIRONMENTAL CORP.**  
MONITORING WELL/SOIL BORING LOG

PAGE 1 OF 1

WELL/BORING NO.: TS-3	DEPTH OF WELL: 16.4 ft DEPTH OF BORING: 18 FT
PROJECT NAME: Calder & Richardson	DEPTH TO WATER: 10.4 ft
PROJECT NO.: 94171	SCREEN DIA.: 2 in. DEPTH: 6.4 - 16.4 ft
INSTALL DATE: 12/19/94	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: kjb	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling & Boring	RISER DIA.: 2 in. DEPTH: 0.5 - 6.4 ft
DRILLING METHOD: Air Rotary	GUARD TYPE: Flush mount curb box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
1						CEMENT GROUT
2						NATIVE BACKFILL
3						BENTONITE SEAL
4						SAND PACK
5						WELL SCREEN
6						RISER PIPE
7						HS HEAD SPACE
8						WATER LEVEL (APPROX)
9		8 - 10	76.8	15,100/0" (2")	Gray brown silty SAND and granite chips, loose, moist (slight fuel-oil odor)	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21		16 - 18	<0.1	4,3,3,4 (14")	Brown silty SAND, little gravel (well rounded), loose, moist (no odor)	
22						
23						
24						
25						

GRANULAR SOILS

BLOWS/FT	DENSITY
0-4	V.LOOSE
4-10	LOOSE
10-30	M.DENSE
30-50	DENSE
>50	V.DENSE

COHESIVE SOILS

BLOWS/FT	DENSITY
<2	V.SOFT
2-4	SOFT
4-8	M.STIFF
8-15	STIFF
15-30	V.STIFF
>30	HARD

PROPORTIONS USED

TRACE	0-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

NOTES:

Located between warehouse building and bulk tanks.

Seen on groundwater.

kjb:\project\94171\crbl3.skd

**TWIN STATE ENVIRONMENTAL CORP.**  
MONITORING WELL/SOIL BORING LOG

PAGE 1 OF 1

WELL/BORING NO.: TS-4	DEPTH OF WELL: 16.5 ft DEPTH OF BORING: 18 FT
PROJECT NAME: Calder & Richardson	DEPTH TO WATER: 9.7 ft
PROJECT NO.: 94171	SCREEN DIA.: 2 in. DEPTH: 6.5 - 16.5 ft
INSTALL DATE: 12/20/94	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: kjb	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling & Boring	RISER DIA.: 2 in. DEPTH: 0.5 - 6.5 ft
DRILLING METHOD: Air Rotary	GUARD TYPE: Flush mount curb box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
1		8 - 10	176	3,13,5,6 (1.5')	Gray black silty SAND and GRANITE CHIPS and GRAVEL, loose, moist (strong fuel-oil odor)	CEMENT GROUT NATIVE BACKFILL BENTONITE SEAL SAND PACK WELL SCREEN RISER PIPE HS HEAD SPACE WATER LEVEL (APPROX)
2						
3						
4						
5						
6						
7						
8						
9						
10						
11		16 - 18	16	1,1,2,2 (2')	Gray brown silty fine SAND, loose, moist (slight fuel-oil odor)	
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

GRANULAR SOILS

BLOWS/FT	DENSITY
0-4	V. LOOSE
4-10	LOOSE
10-30	M. DENSE
30-50	DENSE
>50	V. DENSE

COHESIVE SOILS

BLOWS/FT	DENSITY
<2	V. SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

PROPORTIONS USED

TRACE	0-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

NOTES:

Located southwest of bulk tanks.










Seen on groundwater.

kjb:\project\94171\crbl4.sk

**TWIN STATE ENVIRONMENTAL CORP.**  
MONITORING WELL/SOIL BORING LOG

PAGE 1 OF 1

WELL/BORING NO.: TS-5	DEPTH OF WELL: 16.4 ft DEPTH OF BORING: 18 FT
PROJECT NAME: Calder & Richardson	DEPTH TO WATER: 9.6 ft
PROJECT NO.: 94171	SCREEN DIA: 2 in. DEPTH: 6.4 - 16.4 ft
INSTALL DATE: 12/20/94	SCREEN TYPE/SIZE: Sched. 40 PVC, 0.010 in. mach. slot
TSEC REP.: kjb	RISER TYPE: Sched 40 PVC
DRILLING CO.: Tri-State Drilling & Boring	RISER DIA: 2 in. DEPTH: 0.5 - 6.4 ft
DRILLING METHOD: Air Rotary	GUARD TYPE: Flush mount curb box
SAMPLING METHOD: Split spoon	RISER CAP: Expansion plug

DEPTH IN FEET	WELL PROFILE	SAMPLE DEPTH (FT)	PID (PPMV)	BLOWS/6" AND RECOVERY	SOIL DESCRIPTION AND NOTES	LEGEND
1						 CEMENT GROUT
2						 NATIVE BACKFILL
3						 BENTONITE SEAL
4						 SAND PACK
5						 WELL SCREEN
6						 RISER PIPE
7						 HS HEAD SPACE
8						 WATER LEVEL (APPROX)
9		8 - 10	<0.1	2,2,4,5 (2')	Coarse GRAVEL, some granite chips, little silty sand, loose (no odor)	
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21		16 - 18	<0.1	1,1,2,2 (2')	Brown silty fine SAND, loose, damp (no odor)	
22						
23						
24						
25						

GRANULAR SOILS

BLOWS/FT	DENSITY
0-4	V. LOOSE
4-10	LOOSE
10-30	M. DENSE
30-50	DENSE
>50	V. DENSE

COHESIVE SOILS

BLOWS/FT	DENSITY
<2	V. SOFT
2-4	SOFT
4-8	M. STIFF
8-15	STIFF
15-30	V. STIFF
>30	HARD

PROPORTIONS USED

TRACE	0-10%
LITTLE	10-20%
SOME	20-35%
AND	35-50%

NOTES:

Located southeast of bulk tanks.

kjb:\project\94171\crtbl5.sk

## TS-1

~~MLW # 1~~

Calder & Richardson  
Barre, VT

TRI STATE  
DRILLING & BORING, INC.  
RFD #2, Box 113 West Burke, VT 05871  
(802) 467-3123

TYPE		SAMPLER	
SIZE		Continuous	
HAMMER			
FALL			
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

SOIL  
Saturated  
Wet  
Moist  
Damp  
Slightly Damp

DATE STARTED: 12/19/94

DATE COMPLETED: 12/19/94

FOOTAGE

DEPTH BLOW COUNTS REC

DRILLER'S NOTES &amp; COMMENTS

6 12 18 24

[illegible]

Sand and granite chips.

Coarse gravel, water at 12-13'.

Brown silty fine and very fine sand.

Screen 20' to 10' below GS.  
Riser 10' to 3' above GS.  
Sand 20' to 8' below GS.  
Bentonite 8' to 6' below GS.  
Fill to surface.

Project: Calder & Richardson  
Job Location: Barre, VT  
Engineer: Twin State Environment  
Richmond, VT  
Inspector: Ken Bisceglia #94-171

Driller: Neal S. Faulkner  
Helper: Alan B. Colburn  
Materials: 10' (10 slot) screen,  
13' riser, 2 caps, 4 bags sand,  
2 bags hole plug, 1 well guard.

## TS-2

~~MM-#2~~

Calder & Richardson  
Barre, VT

TRI STATE  
DRILLING & BORING, INC.  
RFD #2, Box 113 West Burke, VT 05871  
(802) 467-3123

TYPE	_____	SAMPLER
SIZE	_____	Continuous
HAMMER	_____	
FALL	_____	

SOIL  
Saturated  
Wet  
Moist  
Damp  
Slightly Damp

DATE STARTED: 12/19/94

DATE COMPLETED: 12/19/94

FOOTAGE

DEPTH	BLOW	COUNTS	REC
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9
10	10	10	10
11	11	11	11
12	12	12	12
13	13	13	13
14	14	14	14
15	15	15	15
16	16	16	16
17	17	17	17
18	18	18	18
19	19	19	19
20	20	20	20
21	21	21	21
22	22	22	22
23	23	23	23
24	24	24	24
25	25	25	25
26	26	26	26
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30	30	30	30
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88	88	88	88
89	89	89	89
90	90	90	90
91	91	91	91
92	92	92	92
93	93	93	93
94	94	94	94
95	95	95	95
96	96	96	96
97	97	97	97
98	98	98	98
99	99	99	99
100	100	100	100

DEILLER'S NOTES &amp; COMMENTS

6 12 18 24

[illegible]

Coarse gravel and cobbles.

Coal and coarse gravel to 18', 18-20'  
fine sand.

Brown fine silty sand, wet at approx.  
12'.

Strong gas odor at 12-14'.

Screen 19' to 9' below GS.  
Riser 9' to GS.  
Sand 20' to 7' below GS.  
Bentonite 7' to 5' below GS.  
Fill to surface.

Project: Calder & Richardson  
Job Location: Barre, VT  
Engineer: Twin State Environment  
Richmond, VT  
Inspector: Ken Bisceglia #94-171

Driller: Neal S. Faulkner  
Helper: Alan B. Colburn  
Materials: 10' (10 slot) screen,  
20' riser, 1 cap, 1 locking plug,  
4 bags sand, 1 bag bentonite,  
1 road box.

# SOIL PROBE LOG

TS-3

Page 3 of 5

~~MW #3~~

Calder & Richardson  
Barre, VT

TRI STATE  
DRILLING & BORING, INC.

RFD #2, Box 113 West Burke, VT 05871  
(802) 467-3123

		SAMPLER	SOIL
		Continuous	Saturated
TYPE	_____	_____	Wet
SIZE	_____	_____	Moist
HAMMER	_____	_____	Damp
FALL	_____	_____	Slightly Damp

DATE STARTED: 12/19/94

DATE COMPLETED: 12/19/94

FOOTAGE				DRILLER'S NOTES & COMMENTS
DEPTH	BLOW	COUNTS	REC	

6 12 18 24

.10-18'...1.15:100 for REF 0:Wet.

Cobbles, drilling 0-18' gravel and  
cobbles, some gas odor 0-5' and 8-14'.

.18-20'...4.3:3:4:14" Wet.

Brown fine sand with some fine gravel.

Screen 17' to 7' below GS.  
Riser 7' to GS.  
Sand 18' to 5' below GS.  
Bentonite 5' to 3' below GS.  
Fill to surface.

Project: Calder & Richardson  
Job Location: Barre, VT  
Engineer: Twin State Environment  
Richmond, VT  
Inspector: Ken Bisceglia #94-171

Driller: Neal S. Faulkner  
Helper: Alan B. Colburn  
Materials: 10' (10 slot) screen,  
10' riser, 1 cap, 1 locking plug,  
6 bags sand, 1 bag bentonite,  
1 road box.

## SOIL PROBE LOG

TRI STATE  
DRILLING & BORING, INC.  
RFD #2, Box 113 West Burke, VT 05871  
(802) 467-3123

TS-4

Page 4 of 5

~~MW # 4~~

Calder & Richardson  
Barre, VT

SAMPLER  
Continuous

SOIL  
Saturated  
Wet  
Moist  
Damp  
Slightly Damp

TYPE \_\_\_\_\_  
SIZE \_\_\_\_\_  
HAMMER \_\_\_\_\_  
FALL \_\_\_\_\_

DATE STARTED: 12/20/94

DATE COMPLETED: 12/20/94

FOOTAGE  
DEPTH BLOW COUNTS REC

DRILLER'S NOTES &amp; COMMENTS

6 12 18 24

10-12'...3|13|.5|..6|14"|Moist.

Dark brown and black fine sandy gravel,  
very strong oil fuel smell.

18-20'...1|.1|.2|..2|16"|Wet.

Brown very fine sand, very loose.

Screen 17' to 7' below GS.  
Riser 7' to GS.  
Sand 18' to 5' below GS.  
Bentonite 5' to 3' below GS.  
Fill to surface.

Project: Calder & Richardson  
Job Location: Barre, VT  
Engineer: Twin State Environment  
Richmond, VT  
Inspector: Ken Bisceglia #94-171

Driller: Neal S. Faulkner  
Helper: Alan B. Colburn  
Materials: 10' (10 slot) screen,  
10' riser, 1 cap, 1 locking plug,  
5 bags sand, 1 bag bentonite,  
1 road box, 12 sample jars.



# SOIL PROBE LOG

TRI STATE  
DRILLING & BORING, INC.  
RFD #2, Box 113 West Burke, VT 05871  
(802) 467-3123

TS-5

Page 5 of 5

~~MW #5~~

Calder & Richardson  
Barre, VT

		SAMPLER	SOIL
		Continuous	Saturated
TYPE	_____		Wet
SIZE	_____		Moist
HAMMER	_____		Damp
FALL	_____		Slightly Damp

DATE STARTED: 12/19/94

DATE COMPLETED: 12/19/94

FOOTAGE

DEPTH BLOW COUNTS REC

DRILLER'S NOTES & COMMENTS

6 12 18 24

.10-12'...2...2...4...5...16" Wet.

Fine gravel with medium and coarse sand,  
0-16' was a fine gravel with a few  
cobbles, no fuel odor.

.18-20'...1...1...2...3...18" Wet.

Fine silty sand.

Screen 17' to 7' below GS.  
Riser 7' to GS.  
Sand 18' to 5' below GS.  
Bentonite 5' to 3' below GS.

Project: Calder & Richardson  
Job Location: Barre, VT  
Engineer: Twin State Environment  
Richmond, VT  
Inspector: Ken Bisceglia #94-171

Driller: Neal S. Faulkner  
Helper: Alan B. Colburn  
Materials: 10' (10 slot) screen,  
10' riser, 1 cap, 1 locking plug,  
4 (#0) bags sand, 1 bag hole plug,  
1 road box.

## **APPENDIX E**



317 Elm Street  
Milford, N.H. 03055  
(603) 673-5440  
FAX (603) 673-0366

December 29, 1994

Mr. Ken Bisceglia  
Twin State Environmental  
P O Box 719  
Richmond VT 05477

<b>Job Name</b>	<b>: Calder &amp; Richardson</b>	<b>Laboratory #</b>	<b>: L23-94-01</b>
<b>Job Number</b>	<b>: 94-171</b>	<b>Purchase Order #</b>	<b>: N/A</b>
<b>Location</b>	<b>: Barre, VT</b>	<b>Control #</b>	<b>: 13016</b>

Dear Mr. Bisceglia,

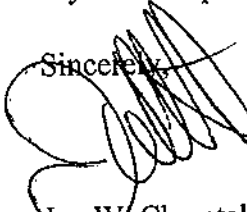
Enclosed please find the laboratory results for the above referenced samples which were received, by the Chemserve sample custodian, under chain of custody control number 13016 on December 23, 1994. Samples were collected by Ken Bisceglia on December 20 & 21, 1994. Any abnormalities to the samples would be noted on the enclosed chain of custody document or laboratory report form. Chemserve follows protocols for analysis corresponding to the methods referenced unless a modification is noted. Unless otherwise stated, all holding times, preservation techniques and container types are analogous with those outlined by the U.S. EPA.

A formal quality assurance/quality control QA/QC program is maintained and updated by Chemserve on a routine basis. This QA/QC manual is available upon request.

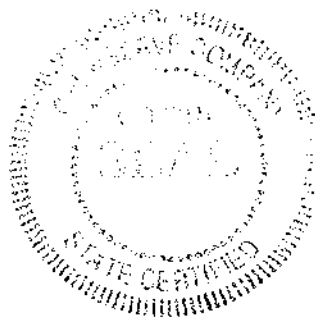
This report is not valid without a completed Chemserve chain of custody with the corresponding control number, attached.

If you have questions or concerns regarding this analysis, please feel free to contact me.

Sincerely,

  
Jay W. Chrystal  
President/Laboratory Director

Enclosures





**VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8020**

**CUSTOMER:** TWIN STATE ENVIRONMENTAL CORP.

**LAB#:** L23-94-01

**SAMPLE LOCATION:** CALDER & RICHARDSON BARRE, VT

**JOB#:** 94-171

**SAMPLE IDENTITY:** TS-1

**CONTROL#:** 13016

**DATE SAMPLED:** 12/21/94

**DATE REC'D:** 12/23/94

**DATE ANALYZED:** 12/28/94

**MATRIX:** LIQUID

**PERCENT MOISTURE:** N/A

**COMPOUND**

**CONCENTRATION  
(UG/L)**

**DETECTION LIMIT MULTIPLIER:  
(UG/L) X 1**

BENZENE

BDL

1

METHYL-TERTIARY-BUTYL ETHER

BDL

1

TOLUENE

BDL

1

ETHYLBENZENE

BDL

1

TOTAL XYLENES

BDL

1

**BDL = BELOW DETECTION LIMIT**

**CERTIFIED BY:** \_\_\_\_\_



**TOTAL PETROLEUM HYDROCARBONS  
EPA MODIFIED METHOD 8015**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: TS-1

CONTROL#: 13016

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/28/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**

**DETECTION LIMIT MULTIPLIER:**

(MG/L)

(MG/L) X 1

BDL

0.1

TOTAL PETROLEUM  
HYDROCARBONS AS  
GASOLINE CONSTITUENTS

**BDL=BELOW DETECTION LIMIT**

CERTIFIED BY: Cy



**VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8020**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: TS-2

CONTROL#: 13016

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/28/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION  
(UG/L)**

**DETECTION LIMIT MULTIPLIER:  
(UG/L) X 1**

BENZENE

BDL

1

METHYL-TERTIARY-BUTYL ETHER

BDL

1

TOLUENE

BDL

1

ETHYLBENZENE

BDL

1

TOTAL XYLENES

BDL

1

**BDL=BELOW DETECTION LIMIT**

CERTIFIED BY:

Cy



**TOTAL PETROLEUM HYDROCARBONS  
EPA MODIFIED METHOD 8015**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: TS-2

CONTROL#: 13016

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/28/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**  
(MG/L)  
BDL

**DETECTION LIMIT MULTIPLIER:**  
(MG/L) X 1  
0.1

TOTAL PETROLEUM  
HYDROCARBONS AS  
GASOLINE CONSTITUENTS

**BDL = BELOW DETECTION LIMIT**

CERTIFIED BY: \_\_\_\_\_

*Cn*



VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: TS-3

CONTROL#: 13016

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/28/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
TOLUENE	BDL	1
ETHYLBENZENE	BDL	1
TOTAL XYLENES	BDL	1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: \_\_\_\_\_

Cy





**TOTAL PETROLEUM HYDROCARBONS  
EPA MODIFIED METHOD 8015**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: TS-3

CONTROL#: 13016

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/28/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**

**DETECTION LIMIT MULTIPLIER:**

(MG/L)

(MG/L) X 1

BDL

0.1

TOTAL PETROLEUM  
HYDROCARBONS AS  
GASOLINE CONSTITUENTS

**BDL = BELOW DETECTION LIMIT**

**CERTIFIED BY:**

Cy



VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8020

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: SS-1

CONTROL#: 13016

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/27/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND

CONCENTRATION  
(UG/L)

DETECTION LIMIT MULTIPLIER:  
(UG/L) X 1

BENZENE

BDL

1

METHYL-TERTIARY-BUTYL ETHER

BDL

1

TOLUENE

BDL

1

ETHYLBENZENE

BDL

1

TOTAL XYLENES

BDL

1

BDL = BELOW DETECTION LIMIT

CERTIFIED BY:



**TOTAL PETROLEUM HYDROCARBONS  
EPA MODIFIED METHOD 8015**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: SS-1

CONTROL#: 13016

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/27/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**

**DETECTION LIMIT MULTIPLIER:**

(MG/L)

(MG/L) X 1


BDL

0.1

TOTAL PETROLEUM  
HYDROCARBONS AS  
GASOLINE CONSTITUENTS

**BDL= BELOW DETECTION LIMIT**

**CERTIFIED BY:**

\_\_\_\_\_



**VOLATILE ORGANIC ANALYSIS**  
**EPA METHOD 8020**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: SS-2

CONTROL#: 13016

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/27/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**  
(UG/L)

**DETECTION LIMIT MULTIPLIER:**  
(UG/L) X 1

BENZENE

BDL

1

METHYL-TERTIARY-BUTYL ETHER

BDL

1

TOLUENE

BDL

1

ETHYLBENZENE

BDL

1

TOTAL XYLENES

BDL

1

**BDL=BELOW DETECTION LIMIT**

CERTIFIED BY: Cu



**TOTAL PETROLEUM HYDROCARBONS  
EPA MODIFIED METHOD 8015**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

JOB#: 94-171

SAMPLE IDENTITY: SS-2

CONTROL#: 13016

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/27/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

**COMPOUND**

**CONCENTRATION**  
(MG/L)  
BDL

**DETECTION LIMIT MULTIPLIER:**  
(MG/L) X 1  
0.1

TOTAL PETROLEUM  
HYDROCARBONS AS  
GASOLINE CONSTITUENTS

**BDL=BELOW DETECTION LIMIT**

**CERTIFIED BY:**                     C

**Quality Control Data**

**Chain of Custody Record**

**Certification**

**SPIKE RECOVERY FORM**  
**EPA METHOD 8020**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-01

SAMPLE LOCATION: CALDER & RICHARDSON BARRE, VT

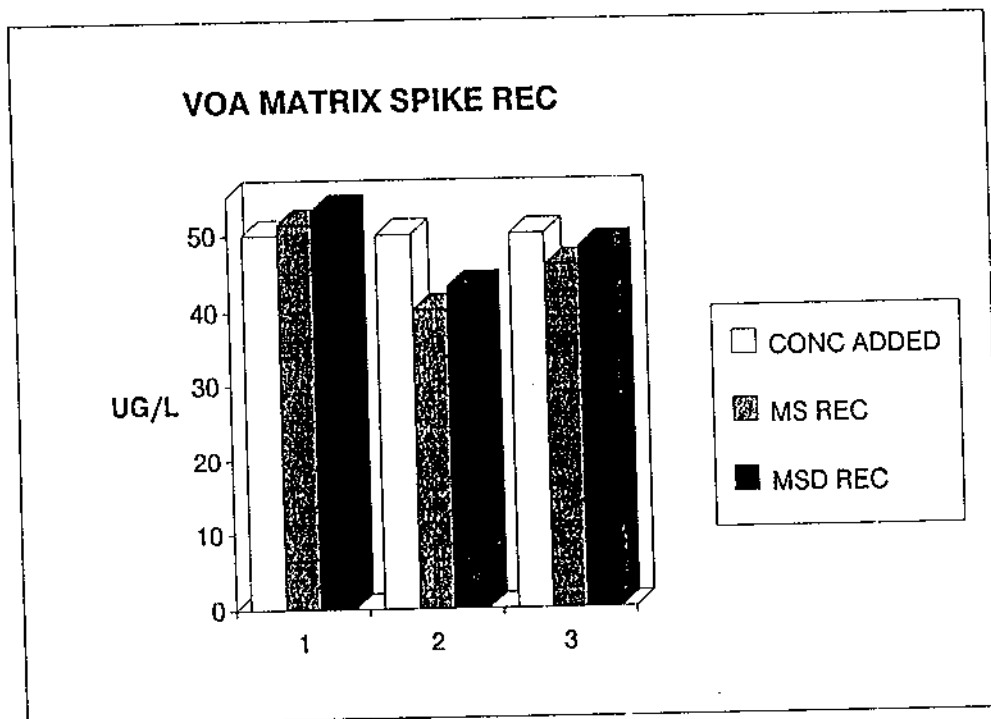
JOB#: 94-171

SAMPLE IDENTITY: QC SPIKES / 13016

CONTROL#: 13016

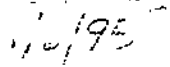
DATE ANALYZED: 12/27/94

COMPOUND	CONC ADDED UG/L	AMT REC UG/L	DUP AMT REC UG/L	%REC	DUP % REC	%DIFF
BENZENE	50	51.35	53.19	103%	106%	4%
TOLUENE	50	40.18	43.22	80%	86%	6%
CHLOROBENZENE	50	45.96	48.32	92%	97%	5%



CONTROL LIMITS +/- 25%

74-61



317 Elm Street  
Milford, NH 03055

## CHAIN OF CUSTODY

A
B
C
D
E
F
G
H
I
J
K
L
M



The State of New Hampshire  
Department of Environmental Services

**CERTIFICATE OF APPROVAL**  
**Drinking Water Analysis**

Issued to  
Chemsolve, Inc.

Located at  
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300

for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, Colilert-MPN, Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrate-N, Nitrite-N, Turbidity, Total Filterable Residue, Calcium, Alkalinity, Sodium, Sulfate, Total Cyanide, Trihalomethanes, Volatile Organics, Vinyl Chloride, and EDB.

PROVISIONAL CERTIFICATION: Fluoride, pH, Corrosivity, Insecticides (Compliance List), and DBCP.

CERTIFICATE NUMBER: 100894-A

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

*Charles H. Hynes*  
Certifying Officer

The State of New Hampshire  
Department of Environmental Services

**CERTIFICATE OF APPROVAL**  
**Wastewater Analysis**

Issued to  
Chemsolve, Inc.

Located at  
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300

for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, ICP Metals, Metals by Graphite Furnace, Mercury, pH, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Total Cyanide, Non-Filterable Residue, Total Phenolics, PCBs in Water, PCBs in Oil, Pesticides, and Volatile Organics.

PROVISIONAL CERTIFICATION: Oil & Grease.

CERTIFICATE NUMBER: 100894-B

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

*Charles H. Hynes*  
Certifying Officer



317 Elm Street  
Milford, N.H. 03055  
(603) 673-5440  
FAX (603) 673-0366

JAN 3 1995

December 29, 1994

Mr. Ken Bisceglia  
Twin State Environmental  
P O Box 719  
Richmond VT 05477

Job Name : Calder & Richardson  
Job Number : 94-167  
Location : Barre, VT

Laboratory # : L23-94-05  
Purchase Order # : N/A  
Control # : 13017

Dear Mr. Bisceglia,

Enclosed please find the laboratory results for the above referenced samples which were received, by the Chemserve sample custodian, under chain of custody control number 13017 on December 23, 1994. Samples were collected by Ken Bisceglia on December 20-22, 1994. Any abnormalities to the samples would be noted on the enclosed chain of custody document or laboratory report form. Chemserve follows protocols for analysis corresponding to the methods referenced unless a modification is noted. Unless otherwise stated, all holding times, preservation techniques and container types are analogous with those outlined by the U.S. EPA.

A formal quality assurance/quality control QA/QC program is maintained and updated by Chemserve on a routine basis. This QA/QC manual is available upon request.

This report is not valid without a completed Chemserve chain of custody with the corresponding control number, attached.

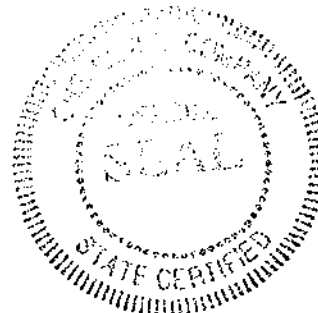
If you have questions or concerns regarding this analysis, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Jay W. Chrystal".

Jay W. Chrystal  
President/Laboratory Director

Enclosures



CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-3

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID CONCENTRATION (UG/L)	PERCENT MOISTURE: N/A DETECTION LIMIT MULTIPLIER: (UG/L) X 10
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLENE	BDL	1
4-CHLOROTOLENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES



**VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-3

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID	PERCENT MOISTURE: N/A
	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 10
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE**  
TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

**PERCENT RECOVERY**  
98%  
94%  
94%

**ACCEPTANCE LIMITS**  
74-111%  
77-109%  
76-110%

BDL = BELOW DETECTION LIMIT  
CERTIFIED BY: Cy

POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-3

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

## COMPOUND

## CONCENTRATION

## DETECTION LIMIT MULTIPLIER:

(UG/L)

(UG/L) X 1

Naphthalene  
Acenaphthylene  
Acenaphthene  
Phenanthrene  
Anthracene  
Fluoranthene  
Pyrene  
Benzo[a]anthracene  
Chrysene  
Fluorene  
Benzo[b]fluoranthrene  
Benzo[k]fluoranthrene  
2-Methylnaphthalene  
Benzo[a]pyrene  
Indeno[1,2,3-cd]pyrene  
Dibenz(a,h)anthracene  
Benzo[g,h,i]perylene

BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL  
BDL

10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10  
10

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: Cu



VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8260

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-4

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID CONCENTRATION (UG/L)	PERCENT MOISTURE: N/A DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	10	1
CHLOROMETHANE	BDL	1
2-CHLOROTOULENE	BDL	1
4-CHLOROTOULENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES



**VOLATILE ORGANIC ANALYSIS**  
**EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-4

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

**COMPOUND**

MATRIX: LIQUID  
CONCENTRATION  
(UG/L)

PERCENT MOISTURE: N/A  
DETECTION LIMIT MULTIPLIER:  
(UG/L) X 1

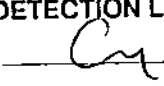
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	5	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE****PERCENT RECOVERY****ACCEPTANCE LIMITS**

TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

94%  
92%  
106%

74-111%  
77-109%  
76-110%

BDL=BELOW DETECTION LIMIT  
CERTIFIED BY: 

POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-4

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION	DETECTION LIMIT MULTIPLIER:
	(UG/L)	(UG/L) X 1
Naphthalene	BDL	10
Acenaphthylene	BDL	10
Acenaphthene	BDL	10
Phenanthrene	BDL	10
Anthracene	BDL	10
Fluoranthene	BDL	10
Pyrene	BDL	10
Benzo[a]anthracene	BDL	10
Chrysene	BDL	10
Fluorene	BDL	10
Benzo[b]fluoranthrene	BDL	10
Benzo[k]fluoranthrene	BDL	10
2-Methylnaphthalene	BDL	10
Benzo[a]pyrene	BDL	10
Indeno[1,2,3-cd]pyrene	BDL	10
Dibenz(a,h)anthracene	BDL	10
Benzo[g,h,i]perylene	BDL	10

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: Cy



CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-5

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID	PERCENT MOISTURE: N/A
	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	9	1
CHLOROMETHANE	BDL	1
2-CHLOROTOULENE	BDL	1
4-CHLOROTOULENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1



**VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-5

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

**COMPOUND**

MATRIX: LIQUID  
CONCENTRATION  
(UG/L)

PERCENT MOISTURE: N/A  
DETECTION LIMIT MULTIPLIER:  
(UG/L) X 1

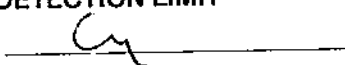
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE****PERCENT RECOVERY****ACCEPTANCE LIMITS**

TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

96%  
98%  
104%

74-111%  
77-109%  
76-110%

BDL=BELOW DETECTION LIMIT  
CERTIFIED BY: 



POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: TS-5

CONTROL#: 13017

DATE SAMPLED: 12/21/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION	DETECTION LIMIT MULTIPLIER:
	(UG/L)	(UG/L) X 1
Naphthalene	BDL	10
Acenaphthylene	BDL	10
Acenaphthene	BDL	10
Phenanthrene	BDL	10
Anthracene	BDL	10
Fluoranthene	BDL	10
Pyrene	BDL	10
Benzo[a]anthracene	BDL	10
Chrysene	BDL	10
Fluorene	BDL	10
Benzo[b]fluoranthrene	BDL	10
Benzo[k]fluoranthrene	BDL	10
2-Methylnaphthalene	BDL	10
Benzo[a]pyrene	BDL	10
Indeno[1,2,3-cd]pyrene	BDL	10
Dibenz(a,h)anthracene	BDL	10
Benzo[g,h,i]perylene	BDL	10

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: Cy

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-3

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID	PERCENT MOISTURE: N/A
	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLENE	BDL	1
4-CHLOROTOLENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES



**VOLATILE ORGANIC ANALYSIS**  
**EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-3

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID CONCENTRATION	PERCENT MOISTURE: N/A DETECTION LIMIT MULTIPLIER:
	(UG/L)	(UG/L) X 1
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE**  
TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

**PERCENT RECOVERY**  
102%  
92%  
104%

**ACCEPTANCE LIMITS**  
74-111%  
77-109%  
76-110%

BDL=BELOW DETECTION LIMIT  
CERTIFIED BY:



POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-3

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION	DETECTION LIMIT MULTIPLIER:
	(UG/L)	(UG/L) X 1
Naphthalene	BDL	10
Acenaphthylene	BDL	10
Acenaphthene	BDL	10
Phenanthrene	BDL	10
Anthracene	BDL	10
Fluoranthene	BDL	10
Pyrene	BDL	10
Benzo[a]anthracene	BDL	10
Chrysene	BDL	10
Fluorene	BDL	10
Benzo[b]fluoranthrene	BDL	10
Benzo[k]fluoranthrene	BDL	10
2-Methylnaphthalene	BDL	10
Benzo[a]pyrene	BDL	10
Indeno[1,2,3-cd]pyrene	BDL	10
Dibenz(a,h)anthracene	BDL	10
Benzo[g,h,i]perylene	BDL	10

BDL = BELOW DETECTION LIMIT

CERTIFIED BY: Cy

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-4

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID	PERCENT MOISTURE: N/A
	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOLENE	BDL	1
4-CHLOROTOLENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES



**VOLATILE ORGANIC ANALYSIS**  
**EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-4

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

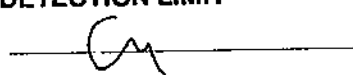
DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: LIQUID	PERCENT MOISTURE: N/A
	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE**  
TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

**PERCENT RECOVERY**  
102%  
92%  
108%

**ACCEPTANCE LIMITS**  
74-111%  
77-109%  
76-110%

**BDL=BELOW DETECTION LIMIT**  
**CERTIFIED BY:** 





POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: SS-4

CONTROL#: 13017

DATE SAMPLED: 12/22/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: LIQUID

PERCENT MOISTURE: N/A

COMPOUND	CONCENTRATION (UG/L)	DETECTION LIMIT MULTIPLIER: (UG/L) X 1
Naphthalene	BDL	10
Acenaphthylene	BDL	10
Acenaphthene	BDL	10
Phenanthrene	BDL	10
Anthracene	BDL	10
Fluoranthene	BDL	10
Pyrene	BDL	10
Benzo[a]anthracene	BDL	10
Chrysene	BDL	10
Fluorene	BDL	10
Benzo[b]fluoranthrene	BDL	10
Benzo[k]fluoranthrene	BDL	10
2-Methylnaphthalene	BDL	10
Benzo[a]pyrene	BDL	10
Indeno[1,2,3-cd]pyrene	BDL	10
Dibenz(a,h)anthracene	BDL	10
Benzo[g,h,i]perylene	BDL	10

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: 

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: CS-1

CONTROL#: 13017

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: SOLID CONCENTRATION (UG/KG)	PERCENT MOISTURE: 5.04% DETECTION LIMIT MULTIPLIER: (UG/KG) X 10
BENZENE	BDL	1
BROMOBENZENE	BDL	1
BROMOCHLOROMETHANE	BDL	1
BROMODICHLOROMETHANE	BDL	1
BROMOFORM	BDL	1
BROMOMETHANE	BDL	1
CARBON TETRACHLORIDE	BDL	1
CHLOROBENZENE	BDL	1
CHLOROETHANE	BDL	1
CHLOROFORM	BDL	1
CHLOROMETHANE	BDL	1
2-CHLOROTOULENE	BDL	1
4-CHLOROTOULENE	BDL	1
DIBROMOCHLOROMETHANE	BDL	1
1,2-DIBROMO-3-CHLOROPROPANE	BDL	1
1,2-DIBROMOETHANE	BDL	1
DIBROMOETHANE	BDL	1
1,2-DICHLOROBENZENE	BDL	1
1,3-DICHLOROBENZENE	BDL	1
1,4-DICHLOROBENZENE	BDL	1
DICHLORODIFLUOROMETHANE	BDL	1
1,1-DICHLOROETHANE	BDL	1
1,2-DICHLOROETHANE	BDL	1
1,1-DICHLOROETHENE	BDL	1
CIS-1,2-DICHLOROETHENE	BDL	1
TRANS-1,2-DICHLOROETHENE	BDL	1
1,2-DICHLOROPROPANE	BDL	1
1,3-DICHLOROPROPANE	BDL	1
2,2-DICHLOROPROPANE	BDL	1
1,1-DICHLOROPROPENE	BDL	1
CIS-1,3-DICHLOROPROPENE	BDL	1
TRANS-1,3-DICHLOROPROPENE	BDL	1
ETHYLBENZENE	BDL	1
METHYLENE CHLORIDE	BDL	1
STYRENE	BDL	1
1,1,1,2-TETRACHLOROETHANE	BDL	1
1,1,2,2-TETRACHLOROETHANE	BDL	1
TETRACHLOROETHENE	BDL	1
TOLUENE	BDL	1
1,1,1-TRICHLOROETHANE	BDL	1

CONTINUED: 1 OF 2 PAGES



**VOLATILE ORGANIC ANALYSIS  
EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: CS-1

CONTROL#: 13017

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/26/94

COMPOUND	MATRIX: SOLID	PERCENT MOISTURE: 5.04%
	CONCENTRATION (UG/KG)	DETECTION LIMIT MULTIPLIER: (UG/KG) X 10
1,1,2-TRICHLOROETHANE	BDL	1
TRICHLOROETHENE	BDL	1
TRICHLOROFLUOROMETHANE	BDL	1
1,2,3-TRICHLOROPROPANE	BDL	1
VINYL CHLORIDE	BDL	1
TOTAL XYLENES	BDL	1
METHYL-TERTIARY-BUTYL ETHER	BDL	1
CARBON DISULFIDE	BDL	1
n-BUTYLBENZENE	BDL	1
sec-BUTYLBENZENE	BDL	1
tert-BUTYLBENZENE	BDL	1
ISOPROPYLBENZENE	BDL	1
4-ISOPROPYLTOLUENE	BDL	1
n-PROPYLBENZENE	BDL	1
1,2,3-TRICHLOROBENZENE	BDL	1
1,2,4-TRICHLOROBENZENE	BDL	1
1,2,4-TRIMETHYLBENZENE	BDL	1
1,3,5-TRIMETHYLBENZENE	BDL	1
NAPHTHALENE	BDL	1
HEXACHLOROBUTADIENE	BDL	1
2-HEXANONE	BDL	10
4-METHYL-2-PENTANONE	BDL	10
2-BUTANONE	BDL	10
ACETONE	BDL	15
ACROLEIN	BDL	50
ACRYLONITRILE	BDL	50
2-CHLOROETHYL VINYL ETHER	BDL	50

**SURROGATE**  
TOLUENE-D8  
4-BROMOFLUOROBENZENE  
DIBROMOFLUOROMETHANE

**PERCENT RECOVERY**  
98%  
84%  
108%

**ACCEPTANCE LIMITS**  
74-111%  
77-109%  
76-110%

BDL=BELOW DETECTION LIMIT  
CERTIFIED BY: Cy



POLYNUCLEAR AROMATIC HYDROCARBONS  
EPA METHOD 8270

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

JOB#: 94-167

SAMPLE IDENTITY: CS-1

CONTROL#: 13017

DATE SAMPLED: 12/20/94

DATE REC'D: 12/23/94

DATE ANALYZED: 12/24/94

DATE EXTRACTED: 12/24/94

MATRIX: SOLID

PERCENT MOISTURE: 5.04%

COMPOUND	CONCENTRATION (UG/KG)	DETECTION LIMIT MULTIPLIER: (UG/KG) X 50
Naphthalene	BDL	10
Acenaphthylene	BDL	10
Acenaphthene	BDL	10
Phenanthrene	BDL	10
Anthracene	BDL	10
Fluoranthene	BDL	10
Pyrene	BDL	10
Benzo[a]anthracene	BDL	10
Chrysene	BDL	10
Fluorene	BDL	10
Benzo[b]fluoranthrene	BDL	10
Benzo[k]fluoranthrene	BDL	10
2-Methylnaphthalene	BDL	10
Benzo[a]pyrene	BDL	10
Indeno[1,2,3-cd]pyrene	BDL	10
Dibenz(a,h)anthracene	BDL	10
Benzo[g,h,i]perylene	BDL	10

BDL=BELOW DETECTION LIMIT

CERTIFIED BY: CM

**Quality Control Data**

**Chain of Custody Record**

**Certification**

**VOA SPIKE RECOVERY FORM**  
**EPA METHOD 8260**

CUSTOMER: TWIN STATE ENVIRONMENTAL CORP.

LAB#: L23-94-05

SAMPLE LOCATION: CALDER 8 RICHARDSON BARRE, VT

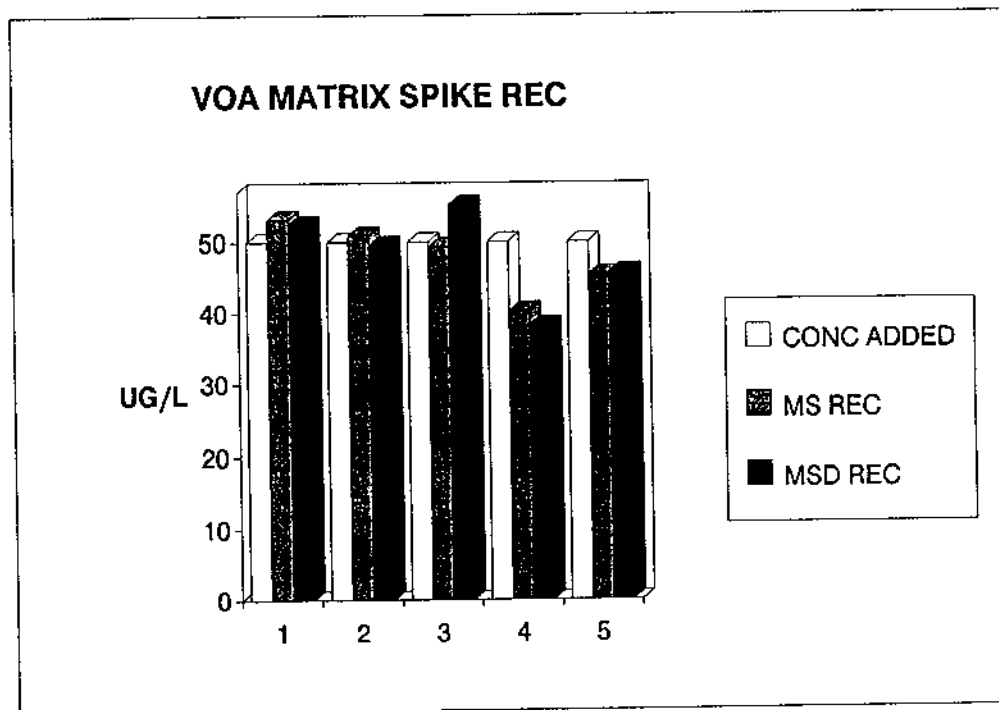
JOB#: 94-167

SAMPLE IDENTITY: QC SPIKES / 13013

CONTROL#: 13017

DATE ANALYZED: 12/26/94

COMPOUND	CONC ADDED (UG/L)	AMT REC (UG/L)	DUP AMT REC (UG/L)	%REC	DUP % REC	%DIFF
1,1-DICHLOROETHENE	50	53.23	52.45	106%	105%	2%
TRICHLOROETHENE	50	50.89	49.58	102%	99%	3%
BENZENE	50	49.28	55.18	99%	110%	12%
TOLUENE	50	40.29	38.33	81%	77%	4%
CHLOROBENZENE	50	45.37	45.75	91%	92%	1%



**SPIKE RECOVERY LIMITS**

1,1-DICHLOROETHENE 74-113%  
TRICHLOROETHENE 72-111%  
BENZENE 76-115%  
TOLUENE 75-117%  
CHLOROBENZENE 75-112%

CONTROL NO. 13017



317 Elm Street  
Milford, NH 03055  
(603) 673-5440  
FAX (603) 673-0366

CHAIN OF CUSTODY

A CUSTOMER INFORMATION	B PROJECT INFORMATION	C SAMPLE INFORMATION
CUSTOMER: <u>TSEC</u>	JOB NAME: <u>CALDER 8 RICHARDSON</u>	TURNAROUND TIME: (CIRCLE ONE) <u>VPC</u>
ADDRESS: <u>RICHMOND VT</u>	JOB NUMBER: <u>94-167</u>	STANDARD <u>RUSH</u>
TELEPHONE: <u>802 434 3350</u>	LOCATION: <u>BARRE VT</u>	ATTN: <u>TOM WALKER</u>
CONTACT PERSON: <u>KEN BISCEGLIO</u>	TELEPHONE: _____	RUSH T.A.T. _____ (Check with lab)
P.O. NUMBER: _____	CONTACT PERSON: (PRINT) _____	RESULTS NEEDED <u>BY 12/28/94</u>

D	E SAMPLE IDENTIFICATION & LOCATION	F DATE COLLECTED	G TIME COLLECTED	H SAMPLE TYPE	I MATRIX	J # OF CONTAINERS	K CONTAINER & PRESERVATIVE	L ANALYSIS
	TS-3	12-21-94	1430	X	L	3	2-40 ml HCL	8260/8270(PAH)
	TS-4	12-21	1515	X	L	3	1-1L	8260/8270(PAH)
	TS-5	12-21	1600	X	L	3	402	8260/8270(PAH)
	SS-3	12-22	1130	X	L	3		8260/8270(PAH)
	SS-4	12-22	1230	X	L	3		8260/8270(PAH)
	CS-1	12-20	1100	X	S	1		8260/8270(PAH)

M CUSTODY	LAB USE ONLY
(PRINT NAME) SAMPLER: <u>KEN BISCEGLIO</u> SIGNATURE: <u>Kenneth Bisceglia</u>	MILITARY DATE/TIME: <u>12-22-94 1600</u>
RELINQUISHED: <u>Kenneth Bisceglia</u>	MILITARY DATE/TIME: <u>12-22-94 1600</u>
RECEIVED: _____	MILITARY DATE/TIME: _____
RELINQUISHED: _____	MILITARY DATE/TIME: _____
RECEIVED FOR LABORATORY: <u>[Signature]</u>	MILITARY DATE/TIME: <u>12-23-94 950 Hrs</u>

A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M

The State of New Hampshire  
Department of Environmental Services

**CERTIFICATE OF APPROVAL**  
**Drinking Water Analysis**

Issued to  
Chemsolve, Inc.

Located at  
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300

for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, Colilert-MPN, Metals by Graphite Furnace, Metals by ICP, Mercury, Nitrate-N, Nitrite-N, Turbidity, Total Filterable Residue, Calcium, Alkalinity, Sodium, Sulfate, Total Cyanide, Trihalomethanes, Volatile Organics, Vinyl Chloride, and EDB.

PROVISIONAL CERTIFICATION: Fluoride, pH, Corrosivity, Insecticides (Compliance List), and DBCP.

CERTIFICATE NUMBER: 100894-A

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

*Charles H. Hynes*  
Certifying Officer

The State of New Hampshire  
Department of Environmental Services

**CERTIFICATE OF APPROVAL**  
**Wastewater Analysis**

Issued to  
Chemsolve, Inc.

Located at  
Elm Street, Milford, NH

Under the provisions of the Regulations in Env-C300

for the following analyses:

FULL CERTIFICATION: Total Coliform by Membrane Filtration, Fecal Coliform by Membrane Filtration, ICP Metals, Metals by Graphite Furnace, Mercury, pH, TDS, Total Hardness, Calcium, Magnesium, Sodium, Potassium, Total Alkalinity, Chloride, Fluoride, Sulfate, Ammonia, Nitrate-N, Orthophosphate, TKN, Total Phosphorus, COD, BOD, Total Cyanide, Non-Filterable Residue, Total Phenolics, PCBs in Water, PCBs in Oil, Pesticides, and Volatile Organics.

PROVISIONAL CERTIFICATION: Oil & Grease.

CERTIFICATE NUMBER: 100894-B

DATE OF ISSUE: December 3, 1994

EXPIRATION DATE: December 2, 1995

*Charles H. Hynes*  
Certifying Officer